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10 January 1986

Japan Report

SCIENCE AND TECHNOLOGY

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JAPAN REPORT

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AEROSPACE SCIENCES

EARTH SENSOR FOR ARTIFICIAL SATELLITE CONTROL DISCUSSED

Tokyo SENSA GIJUTSU in Japanese May 85 pp 69-74

[Article by Kunio Nakamura, Matsushita Giken, Matsushita Technical Research Company: "Earth Sensor for Artificial Satellite Attitude Control"]

[Text] When in space, artificial satellites operate in general accordance with the law of gravitation but, in reality, there are various external disturbances and orbital balances which cannot be maintained by the attraction of the earth and the centrifugal force of the satellite alone. Hence, the necessity for confirmation of the state of satellite operation and the appropriate control of satellite attitude. Also, deciding a certain attitude is absolutely necessary to put a satellite in its planned orbit after launching by a ground rocket. Further, weight is one of the most important items of design in the launching of satellites and the amount of fuel used for attitude control must be minimized, but this hinges on how precisely the attitude can be detected. Application satellites in orbit are operated according to their purpose. Attitude control is important to any satellite, whether a meteorological satellite, communications satellite, or broadcasting satellite. This is evident from the fact that the antenna, is of no use if not in its planned direction. For these reasons, satellites are designed so that their attitude can be detected by sensors.

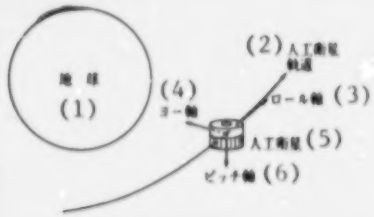
As for sensors, there are the earth sensor, the solar sensor, the sidereal sensor, the geomagnetic sensor, etc. The earth sensor is one of the most important to application satellites operated around the earth. This sensor has the function of deciding the attitude of a satellite to the earth and can decide two of the three attitude axes. An attitude detecting system is designed by combining it with the solar sensor to decide all three axes. The earth sensor is sometimes used to decide only one axis.

The definition of the three attitude axes is shown in Figure 1. Normally, the roll axis is taken in the direction the satellite proceeds and the yaw axis is taken in the direction toward the center of the earth. The remaining direction is the pitch axis. Of these three axes, the yaw axis attitude cannot be determined by the earth sensor.[1]

Figure 1. Definition of Attitude Axes of Artificial Satellite (Attitude to Earth)

Key:

1. Earth
2. Orbit of artificial satellite
3. Roll axis
4. Yaw axis
5. Artificial satellite
6. Pitch axis



1. Principle of Earth Sensor

There are various formulas for earth sensors but all are optical sensors which detect infrared rays radiated from the earth. The earth sensor is also known as the "horizon detector" and is used to detect the attitude of the satellite to earth by decerning the horizon. To determine the horizon, it perceives infrared rays radiated from the earth. Specifically, it detects infrared rays radiated from the atmosphere with a wavelength in the 14-16 μm band (infrared radiation zone of carbon dioxide) or the 22-40 μm band (infrared radiation zone of aqueous vapor). Since this atmosphere is only about 40 km from the earth, (less than 1 percent of the earth's radius of 6,378 km), there is no issue if this is used as the standard. The reason infrared information is provided is for stability.

Visible information varies widely, depending on solar irradiation, because it is reflected or scattered light from solar irradiation. Thus, in visible light the earth sometimes is not round when it is viewed from the satellite. This does not occur with infrared rays of 10 μm or more because these are radiated from normal-temperatured objects. Since infrared radiation intensity is greatly affected by temperature, a wavelength with as stable a radiation intensity as possible is selected from the standpoint of S/N. Figure 2 shows forecast calculated values for spectrum distribution of infrared radiation from the earth.[2,3] There is a wavelength domain which varies according to the season and the conditions of day and night. For example, almost complete stability at an average 250 $\mu W/cm^2/Sr \cdot \mu m$ prevails in the carbon dioxide infrared radiation band of 14-16 μm. This means that infrared rays from the ground surface are absorbed by carbon dioxide in the atmosphere and do not reach the satellite, while infrared rays from carbon dioxide in the atmosphere with relatively stabilized temperatures do reach the satellite. In this wavelength band, there is a fall from the black body radiation spectrum distribution curve for ground surface temperature. This is because air temperature above, approximately -40°C, is lower than the ground surface temperature (see Figure 2).

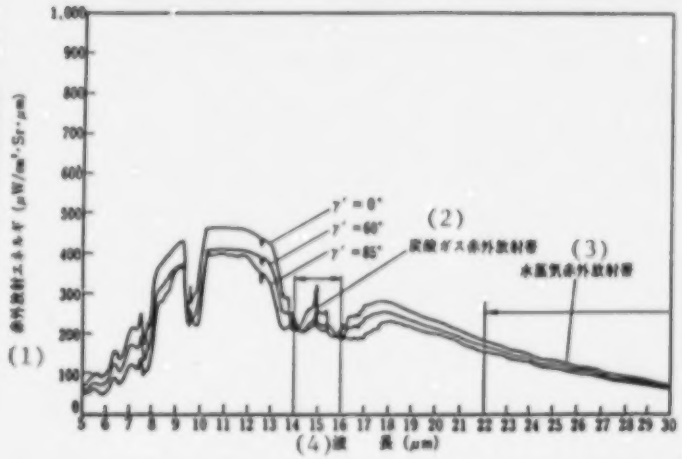
This provides excellent information with high S/N because its infrared radiation intensity is low but stabilized.

Methods to detect the horizon attitude information can be generally divided into the following two:[4]

Figure 2(a). Spectrum Distribution of Infrared Radiation from the Earth[2,3] (winter, latitude 30-40°, night) --Calculated, using atmospheric observation data from different parts of North America -γ^1: nadir angle (see Figure 3)

Key:

1. Infrared radiation energy
2. Carbon dioxide infrared radiation band
3. Aqueous vapor infrared radiation band
4. Wavelength



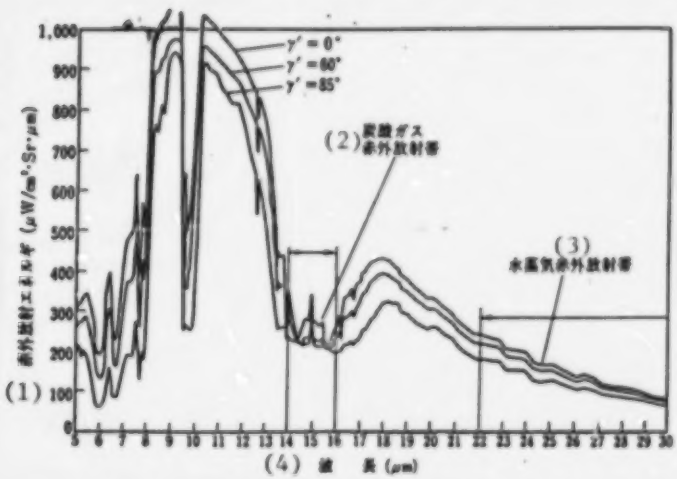


Figure 2(b). Spectrum Distribution of Infrared Radiation from the Earth (summer, latitude 30-40°, daytime)--Calculated, using atmospheric observation data from different parts of North America -γ^1: nadir angle (see Figure 3)

Key:

1. Infrared radiation energy
2. Carbon dioxide infrared radiation band
3. Aqueous vapor infrared radiation band
4. Wavelength

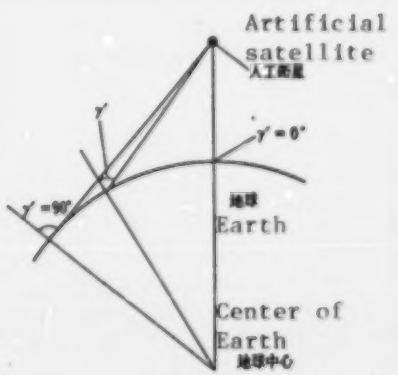


Figure 3. Definition of Nadir Angle γ^1

Balance Type

In Figure 4, the balance type formula confirms the attitude of the satellite by the balance of infrared signals from a plural number of detecting elements. If the attitude of the satellite deviates, the balance of infrared signals B and D in Figure 4 changes and signal B becomes larger. This shows that the attitude of the satellite has deviated to the right.

Figure 4. Chart Showing Principle of Attitude Detection by Balance Type Earth Sensor. A, B, C and D: infrared detecting elements

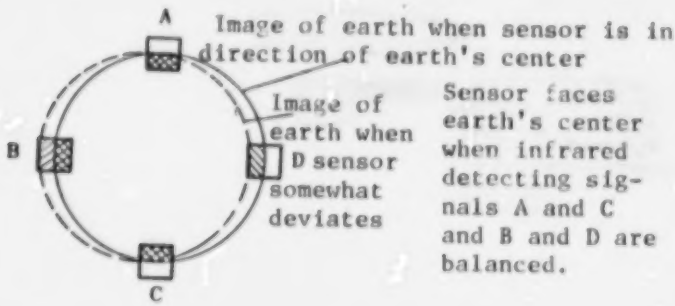
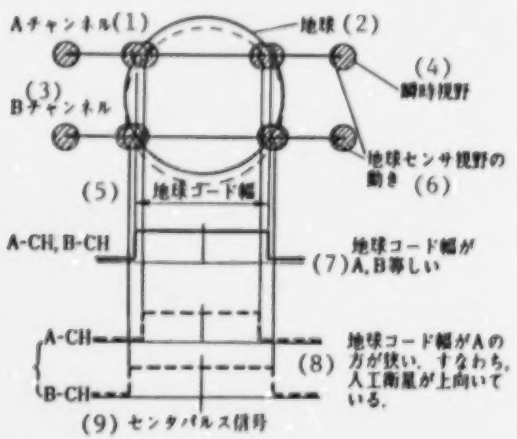

A
B
C
D
Image of earth when sensor is in direction of earth's center
Image of earth when D sensor somewhat deviates
Sensor faces earth's center when infrared detecting signals A and C and B and D are balanced.

Figure 5. Chart Showing Principle of Attitude Detection by Scan Type Earth Sensor

Key:

1. Channel A
2. Earth
3. Channel B
4. Instantaneous field of vision
5. Earth code width
6. Shift of earth sensor's field of vision
7. Equal earth code width for A and B
8. Earth code width is smaller for A. Thus, artificial satellite turns up.
9. Center pulse signal



Scan Type

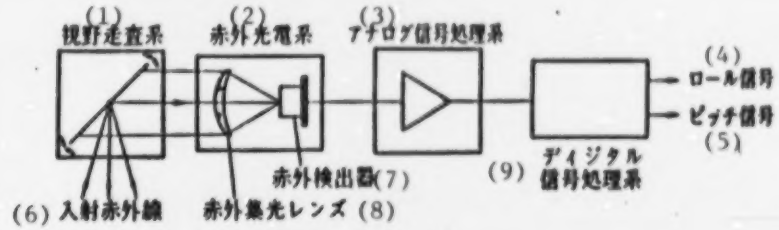
In Figure 5, the scan type detects the position of the earth's end (horizon) by scanning the field-of-vision of the infrared detector. Methods of scanning include use of the satellite's spin, prism lens and rotary or vibrative mirrors attached to the scan wheel. It perceives the space/earth boundary through changes in infrared signals. In Figure 5, if the satellite rotates up from a position of facing the earth (represented by the solid line), the earth now (represented by the broken line) results in changes of the earth

code widths in channels A and B. In other words, the channel A code width becomes narrower than the channel B code width; thus, one can see that the satellite has turned up. This is roll axis attitude. However, two channels are not always necessary. Since earth code width can be calculated from the altitude and attitude of a satellite, it is possible to determine roll axis attitude from information in Figure 5 and the satellite's orbit. Information on pitch axis attitude can be obtained by observing the horison and setting a standard signal in the field-of-vision scanning system and using it as the standard. Specifically, if the center pulse signal (scanning system center) in Figure 5 is used as the standard, the leading or trailing of the earth's pulse signal provides pitch axis attitude information.

2. Composition of the Earth Sensor

The main composition of the earth sensor is indicated in Figure 6. The formulas have several unnecessary components. In the balance formula, the field-of-vision scanning system is unnecessary; in the scanning formula, the scanning system is also unnecessary. In the digital signal processing system, the changes from earth pulse signals into roll and pitch signals, is not always included in the earth sensor. The solar sensor may, in some designs, be included to contend with solar interference.

Figure 6. Composition of Earth Sensor (By formulas, some components are unnecessary.)



Key:

1. Field-of-vision scanning system
2. Infrared photoelectric system
3. Analog signal processing system
4. Roll signal
5. Pitch signal
6. Incident infrared ray
7. Infrared detector
8. Infrared condenser
9. Digital signal processing system

The components may be classified by functions as follows:

1. Optical system and infrared photoelectric system (including alignment)

2. Signal processing electronic circuit system

3. Power system (including DC/DC converter)

4. Relay system (connector and wire harness)

5. Structural system

A DC/DC converter is often included in the power system of an earth sensor because normally the primary supply voltage of satellites is 29 V. Earth sensors are designed to detect weak infrared signals from the earth. It is, important to safeguard them from various wave and power line noises and, from the standpoint of designing electromagnetic adaptability for this purpose, the above-mentioned c, d and e [as published] are key components.

3. Evaluation Factors of the Earth Sensor

The purpose of the earth sensor is to detect the attitude of a satellite. Precision is most important but weight, environmental resistance and reliability are evaluation factors that cannot be ignored. Important evaluation factors affecting the earth sensor as follows:

1. Precision

2. Weight

3. Power consumption

4. Reliability

5. Environmental resistance

6. Operating restrictions

In addition to the above, performance specification, price, manufacturing schedule and the relative ease of ground test evaluation are important.

Precision: This should be evaluated separately for random and bias errors. Random errors are caused by sensor noise. Bias errors are unpredictable errors developing slowly over a long period of time and due mainly to:

(i) Intensity variation of infrared radiation from the earth.

(ii) Variation of earth sensor characteristics due to change of ambient temperature.

(iii) Variation due to alignment error and temperature change.

(iv) Change of satellite altitude.

These errors are related to satellite operation conditions and cannot be evaluated by the earth sensor alone. Random errors are the exception and can be evaluated solely by the earth sensor. They are also known as single-sensor errors. Response speed capacity is included as a cause of errors, but can be controlled to some extent by repeated signals in system design.

Weight: Lightening alone is not enough. The weight of an earth sensor must be designed comprehensively, taking into consideration resistance to vibration, countermeasures against errors (due to temperature change) and the effects of electromagnetic shielding.

Power consumption: This is an important item of evaluation because the power supply from the solar cell is limited by satellite design.

Reliability: Once launched into space, instruments can rarely be repaired. Therefore, the necessity of careful design. Normally, work to enhance certainty is performed by considering reliability at the design stage, quality control at the stage of manufacture and evaluation testing. Specifically, this work begins with the study of parts and materials to be used and must include design efforts to help eliminate single disorders (disorders at single points that stop normal operation. Appropriate allowances for resistance to environments should also be made. There must be a balanced and sound design with consideration for reliability apportionment.

Resistance to environments: It is necessary to be able to withstand both rocket launching environment and space orbit. These environmental conditions are requirements determined by the design of the satellite and rocket and represent environmental interfaces by the addition of satellite attaching conditions, taking into consideration the capability of the earth sensor.

The main items are as follows:

1. Resistance to vibration and impact

2. Resistance to heat and vacuum

3. Resistance to radiation

4. Electromagnetic adaptability

Restrictions in operating: This must be considered in conjunction with the various items of evaluation. Satellite precision in the correct state of attitude (null state) and precision at the time of deviation from the null state are not always identical; rather, they disagree in most cases. The extent to which this null precision can be maintained is important to operation. Differences develop in the sensor's ease of use and operating restrictions. The earth pick-up domain and the extent of interference by the sun and the moon must also be studied.

4. Outline of Various Earth Sensors

Most earth sensors used in Japan are European and American products. Japanese earth sensors, using a unique pyroelectric infrared detector differ from the thermistor and thermopile infrared detectors of Europe and America. They are produced by Matsushita Giken Co. The evaluation of earth sensors is concerned with the satellite systems design and simplistic comparison is impossible with many parts. An outline of leading European, American and Japanese earth sensors is given in Table 1.

Precision: Precision varies according to the satellite's altitude. Generally, geostationary altitude provides high precision.

Table 1. Outline of Leading Earth Sensors

Formula	Balance Type			Scan Type		
Manufacturer Model	Quantech Model 5100	Quantech Model 5106	Burns Model 13-401	Lockheed LAHS	Lockheed NOHS	Matsushita Giken PHI-LM*
Altitude of artificial satellite	Geostationary altitude (36,000 km)	Low altitude (800-1,200 km)	Low altitude (740-925 km)	Low altitude (837 km)	Geostationary altitude (36,000 km)	Transfer orbit (15,000-36,000 km)
Infrared detector	Thermocouple	Thermocouple	Thermopile	Thermistor	Thermistor	Pyroelectric element
Field-of-vision scanning formula	---	---	---	Mirror scan	Mirror scan	Using satellite scan
Infrared wavelength used	22-33 μm	14-16 μm	14-16 μm	14.1-15.8 μm	14.1-15.8 μm	14-16 μm
Attitude detecting precision (Nominal altitude 3σ)	0.046°	0.15°	Pitch axis: 0.068° Roll axis : 0.048°	0.1°	0.05°	0.1° (infrared input level nominal) (random error)
Weight	2.52 kg	3.38 kg	4 kg	1.5 kg	1.82 kg	1.12 kg
Power consumption	3.2W	3.2W	1.35W	3.1W	3.5W	2.3W
Redundant system	Yes	Yes	Yes	Yes	No	Yes
Reliability (survival rate/hour)	0.9988 (7 years)	0.9982 (7 years)	0.9976 (2 years)	0.95 (2 years)	0.9488 (1 year)	0.9999999 (200 hours) 0.996) (7 years)

* PHI-LM: Pyroelectric Horizon Crossing Indicator Learning Model

Weight: Earth sensors of the balance type are heavy because of their temperature controlling devices while the scan type sensors are light in weight.

Reliability: The reliability of earth sensors and their life requirements vary depending whether there is a redundant system present. A comparison of their reliabilities is difficult, the diversity of conditions required by satellite systems makes it impossible to evaluate them in general terms. Table 1 shows only some details of earth sensors.

Space tests on Japanese earth sensors (Table 2) using pyroelectric infrared detecting elements were conducted, utilizing scientific research satellites from the Institute of Space and Astronautical Science. Data was accumulated. Later, a scan type earth sensor was developed jointly by the National Space Development Agency and the Aeronautic and Space Technology Research Institute as experimental equipment to be carried by the Technological Experiment Satellite IV (Kiku No 3).[5] Photo 1 [omitted] shows its rotary head and Figure 7 shows its mounting on Kiku No 3.[5] It is composed of two rotary heads and an electronic apparatus. This scan type earth sensor fulfilled its objectives during two years of operational research and produced useful space data.[5,6]

It was on the basis of these results that the Japanese earth sensor in Table 1 was developed. An engineering model (EM) has been developed under the ETS-V Project. Work using a laboratory model (LM) under the research plan (Tsukuba Space Center was done. It will be used in the transfer orbit (orbit prior to entry into geostationary orbit) of Technological Experiment Satellite V (ETS-V). The completion of a satellite-carried model is scheduled for the summer of this year. The earth sensor, when completed, will be incorporated into the attitude control subsystem and into the satellite system. ETS-V is scheduled to be launched from the Tanegashima Space Center in the summer of 1987.

This earth sensor is called the earth sensor for spin phase use (PHI: pyroelectric horizon crossing indicator) because it is designed for use in satellite spin stability. Under the ETS-V Project, it is called spin earth sensor (SES). Photo 2 [omitted] shows the SES-EM. The optical package and the infrared detector, main components of this earth sensor, are shown in Photo 3 [omitted]. Through the field-of-vision scanning system and the digital signal processing system in Figure 6 are not included, two sets composed of an infrared photoelectric system, a signal processing system and a power source are housed in the monoblock structure and form complete redundant systems. The field-of-vision direction of the optical package is tilted upward and downward 40 each; thus, field-of-vision scanning for an angular aperture of 80 will be performed by the spin of the satellite. The earth signals are digitalized so that output by two values: L (space) and H (earth) may be possible. The main specifications are shown in Table 3.

□ ..... □

A future development plan for precision earth sensors (Tsukuba Space Center) has been started. It will be mounted on the Technological Experiment Satellite IV (satellite of the National Space Development Agency).

Table 2. Space Tests on Domestically Produced Earth Sensors (Manufacturer: Matsushita Giken Co.)

Earth Sensor	Type	Satellite	Year Launched	Delivered to:
Earth sensor for spin phase use	HOS-01	Tansei #2	1974	Tokyo University Space Research Institute*
do.	HOS-01	K-9M-47	1974	do.
do.	HOS-01	Taiyo	1975	do.
do.	HOS-01	Tansei #3	1977	do.
do.	HOS-01	Tansei #4	1980	do.
do.	HOS-01	Hinotori	1981	do.
Scan type earth sensor	HS-01	For ground test	----	Aeronautic and Space Technology Research Institute
do.	HOST-01	Kiku #3**	1981	National Space Development Agency
Earth sensor for spin phase use	HS-02	TT500A	August 1983	Aeronautic and Space Technology Research Institute
do.	PHI-LM	----	----	National Space Development Agency
do.	SES	ETS-V	1987	do.

* Now known as the Institute of Space and Astronautical Science
** ETS-W

Figure 7. Mounting of Scan Type Earth Sensor (HOST)[5] (Mounting on Kiku No 3, Technological Experiment Satellite)

Key:

1. Head 1
2. Electronic apparatus
3. Head 2
4. Size of Kiku No 3 Length : 2.77 m
   Diameter : 2.1 m

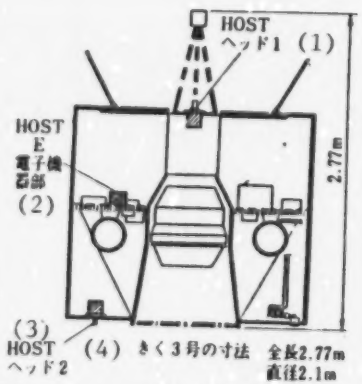


Table 3. Earth Sensors for Spin Phase Use

Item \ Model		Earth sensors for spin phase use	
		Laboratory model	Operational machine for ETS-V
Size (mm) (excluding optical protrusion)		128 x 122 x 104	148 x 122 x 104
Weight (kg)		1.12	1.26 $\pm$ 0.05
Power consumption (W)		2.34 max (when cold)	3.4 max
Measuring precision		0.1° $\sim$ 0.340 (depending on using conditions)	Same as left
Infrared optical system	Infrared detector	Titanate pyroelectric element	Same as left
	Infrared filter	14 $\sim$ 16 μm	Same as left
	Infrared condenser system	F/1.1, ϕ32	Same as left
	Instantaneous field-of-vision angle	1.5° $\pm$ 0.2°	Same as left
Resistance to environments	Allowable working temperature	-40°C $\sim$ +70°C	-25°C $\sim$ +55°C
	Random vibration	22.6G	22.7G
	Acceleration	20G	20G
	Impact	150G	150G

Research and development with emphasis on cyroelectric infrared detectors is being conducted to help Japan develop earth sensors of its own.

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CSO: 4306/2509

AEROSPACE SCIENCES

SATELLITE 'SAKURA' TO BE DEACTIVATED

OW131053 Tokyo KYODO in English 1013 GMT 13 Nov 85

[Text] Tokyo, Nov 13 KYODO--The National Sapce Development Agency announced Wednesday that it will cease operating the experimental stationary satellite Sakura on 15 November, eight years after it was launched in the United States.

The Sakura has been used for the world's first test of superhigh frequency since it was launched into the stationary orbit some 36,000 kilometers over the Equator from the Kennedy Space Center in Florida on 15 December 1977.

The agency said it has decided to halt the operation of the satellite because it has run out hydrogen fuel for controling its position.

It will be moved out of the stationary orbit with the remaining fuel, it said. The Sakura is the second stationary satellite to end its mission, following the experimental broadcasting satellite Yuri.

/7358
CSO: 4307/002

AEROSPACE SCIENCES

AGREEMENT ON JOINT LIGHT AIRLINER REACHED WITH PRC

OW190437 Tokyo KYODO in English 0353 GMT 19 Nov 85

[Text] Tokyo, Nov 19 KYODO--Japan and China have reached basic agreement to jointly develop a 30-40 seater passenger aircraft by 1990, the Ministry of International Trade and Industry (MITI) said Tuesday.

The agreement, reached at working-level bilateral talks held in Beijing Monday, calls for China to manufacture about 600 turbo-propeller airliners based on a basic design to be produced by Japan, a MITI spokesman told reporters.

China has expressed the hope that Japan will sell about 300 planes to Southeast Asian countries, while China uses the rest for intercity transport, the official said.

A special committee of the Society of Japanese Aerospace Companies will send industry representatives to China at the end of this year to study the feasibility of the project.

The committee will also study the possibility of financing from the government-owned Japan Development Bank and Export-Import Bank of Japan as well as Chinese state financing, depending on its foreign reserves.

The project is part of China's seventh five-year economic modernization plan starting next year.

China proposed the project last August when a delegation of Japanese aerospace experts visited China.

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CSO: 4307/002

AEROSPACE SCIENCES

NEW OSAKA AIRPORT PROJECT SPARKS TRADE FRICTION

OW190553 Tokyo KYODO in English 0534 GMT 19 Nov 85

[Article by Susan Moffat]

[Text] Osaka, Nov 19 KYODO--Japan's plan to build an international airport in Osaka with twice the capacity of Tokyo's Narita is designed to open up western Japan to the world, but is instead becoming the source of new trade friction.

The 1 trillion yen (about 5 billion dollars) project to build Japan's first 24-hour airport on a man-made island in Osaka Bay, scheduled to begin next year for completion in 1993, will be western Japan's largest construction and communications project in this half-century, and a model for the private operation of public facilities.

Foreign governments are clamoring for the airport to set up an open bid/tender system to make it easier for non-Japanese suppliers, but they're having trouble getting their own private sectors to make an effort to sell.

"We're open to buying imported navigation and communications equipment," Kansai International Airport Company President Yoshio Takeuchi, formerly of the Ministry of Transport, told KYODO News Service "but so far all we've heard is demands from governments, almost nothing from actual companies."

Foreign government officials say the companies are waiting for clearly announced specifications and the promise of an openly competitive tender system.

The pattern of this dispute, just beginning, is typical of many areas of Japan-U.S. trade friction.

American officials say they were deeply disappointed Kansai (Osaka region) International Airport Co. was not included in the government's "action program" for improving procurement procedures announced last July, which did include Nippon Telegraph and Telephone Corp. (NTT).

The airport, whose capital of 120 billion yen ranks it with Toyota Motor and Fujitsu, takes on a significance beyond its own runways as it may serve as a model for future massive privatizations, including the Japanese National Railways and Japan Air Lines.

Like the recently privatized NTT, it is a nominally private company, whose shares are held 2/3 by the government and 1/6 by local governments. (NTT's shares are still all held by the government).

But unlike NTT, the company has been "private" from the start though its staff of just 150 is drawn almost entirely from government ministries, with only five employees supplied by the private sector.

Also unlike NTT, foreign investors say they aren't particularly interested in buying shares because the first slim profits may not come for another 25 years, though Takeuchi predicts the operation will go into the black after just five years.

Osaka Corporations, however, are breaking down doors to buy stock. They offered 480 billion yen when only 200 billion yen in shares were allocated to the private sector, and the company is now discussing whether to increase that share.

Led by large enterprises such as Matsushita Electric, Sumitomo Metals, and Kansai Electric Power Co., the businessmen say they're investing out of civic duty and hopes of indirect benefits from the revival of the economically stagnating Osaka region, Japan's historical center of commerce and industry.

A shareholder's commitment to the project is also good for a company's chances of selling goods and services to the airport.

But foreigners are hopeful of getting a piece of the 880 billion yen debt-financing business the project will create. A company spokesman said "most of the major American and European banks" operating in Japan have made contact with the company.

Foreign airlines are also looking forward to increased business. The airport's 24-hour operation, allowing 160,000 takeoffs and landings a year, will give some of the 33 foreign airlines waiting to be granted access to Japan a chance to land in Osaka.

That will also increase the opportunity for Japanese airlines to land abroad through reciprocal agreements.

Asian trade, in particular, will be greatly aided by the increased capacity in Japan's traditional gateway to the south and west.

With the world's largest cargo capacity, the Kansai Airport hopes to get back for Japan business lost to airports in Singapore and Taiwan, and firmly establish Japan as the main air transfer point between Asia and the rest of the world.

Osakans hope the airport will attract high-tech business, international conferences, and win back the economic leadership that it has lost to Tokyo since World War II.

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CSO: 4307/002

AEROSPACE SCIENCES

FRENCH BUSINESSMEN URGE AIRCRAFT PURCHASES

OW071727 Tokyo KYODO in English 1025 GMT 7 Nov 85

[Text] Tokyo, Nov 7 KYODO--A group of French business leaders called on Japan to purchase passenger planes and helicopters in a meeting Thursday with Prime Minister Yasuhiro Nakasone.

Nakasone in turn suggested that French firms step up industrial cooperation with Japanese companies through technological and capital tie-ups, officials said.

Similar conversations took place between the French delegation, led by Yvon Gattaz, head of the National Confederation of French Employers (CNPF), and Foreign Minister Shintaro Abe and International Trade and Industry Minister Keijiro Murata in separate meetings.

The officials said Gattaz, the founder of the electronics maker Radial, complained of stumbling blocks to the entry of foreign enterprises into the Japanese market.

Nakasone requested Gattaz to draw up a list of such obstacles and produce it to the Japanese Government, the officials said after the meeting.

In response to the request for Japan to buy French aircraft, the Japanese premier said that purchases of aircraft are a matter for all Nippon Airways and other Japanese carriers to consider. He added that his government is currently working on easing regulations for setting up heliports in Japan, Japanese officials told reporters.

Nakasone also said that Japan's "action program" will give foreign products greater access to Japanese markets because of its radical quantitative and qualitative improvements.

Foreign Minister Shintaro Abe, meeting earlier in the day with the French business leaders, lamented that the European Community has failed to make a proper assessment of the market liberalization program, according to a ministry official.

Abe told the French group that Japan and the EC will hold top-level talks November 16-18 to strengthen their economic relations, the official said.

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CSO: 4307/002

AEROSPACE SCIENCES

MITI PUSHES PLAN TO DEVELOP ATP AIRCRAFT ENGINE

OW140603 Tokyo KYODO in English 0555 GMT 14 Oct 85

[Text] Tokyo, Oct 14 KYODO--The Ministry of International Trade and Industry (MITI) is pushing an industrial plan to jointly develop an advanced turbo-pro (ATP) engine, which MITI officials who announced this Monday call the aircraft engine of the 21st Century.

The ministry is encouraging a plan to establish a new firm as early as next spring along with five major aircraft-related Japanese makers, Mitsubishi Heavy Industries Ltd., Ishikawajima-Harima Heavy Industries Co., Kawasaki Heavy Industries Ltd., Fuji Heavy Industries Ltd. and Sumitomo Precision Products Co., the officials said.

The ATP engine, when developed, will be capable of mach 0.8, and be approximately 25 percent more fuel-efficient than the conventional turbo-fan type engine.

The engine will also use new materials to make it quiet and light-weight, and its development will involve research into engines, propellers and fuselages as well as electronics and other advanced technology the officials said.

The ATP engine, on which American and European makers, are also working, is expected to come into wide use by world aircraft makers after about 1995, they said.

MITI is planning to invest in the projected joint firm using funds from the newly-established Basic Technology Research Promotion Center, which it administers jointly with the posts and telecommunications ministry, the officials added.

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CSO: 4307/002

CHEMICAL ENGINEERING

FIBER REINFORCED PLASTICS DESCRIBED

Tokyo NIKKO MATERIALS in Japanese Jan 85 pp 85-96

[Article by the Industrial Survey & Research Department of Kagaku Sangyo Kaihatsu Co.: "Advanced Fiber Reinforced Plastics"]

[Excerpts] History of FRP Development

The development of fiber reinforced plastics (FRP) in Japan is said to date back to when some Japanese researchers undertook to analyze the structure of gasoline tanks from U.S. planes which carried protective plates for the tanks. But full-fledged research activity for the development of FRP did not come until around 1952. The FRP developed by Japanese researchers was first used in the manufacturing of helmets and corrugated plates. Around 1955, the FRP began to be utilized for the production of a wider range of products, such as boats, yachts, chairs, and dog-pulled sledges for use by Japanese scientists engaging in scientific observations in the Antarctic. In 1958, bathtubs were also added to the line of commercial FRP products and this helped popularize the name of FRP among Japanese consumers. By 1960, the kinds of products which were made with FRP had further expanded, and motorboats hulls and archery bows were also produced using FRP. In the years after 1960, FRP began to be used in the production of larger-sized products, such as tanks for purifying water (1961) and drinking water tanks set up atop towers or buildings. Parallel with the growth in the size of the products, a diversification in the production method of those FRP products was also taking place. FRP pipes and rods began to be manufactured using the drawing-molding method. Diversification in the production method also helped FRP in the manufacturing of a wider range of products.

During those years of development of new FRP products, a spectacular progress was made in molding FRP materials to produce FRP products. The molding method progressed from the hand lay-up molding to the "spray-up" molding (1959) to the hot press molding (1962), to the pre-form MMD molding (1967), to the SMC molding (1977). The development of these molding methods has contributed to the resultant progress of the FRP industry in Japan.

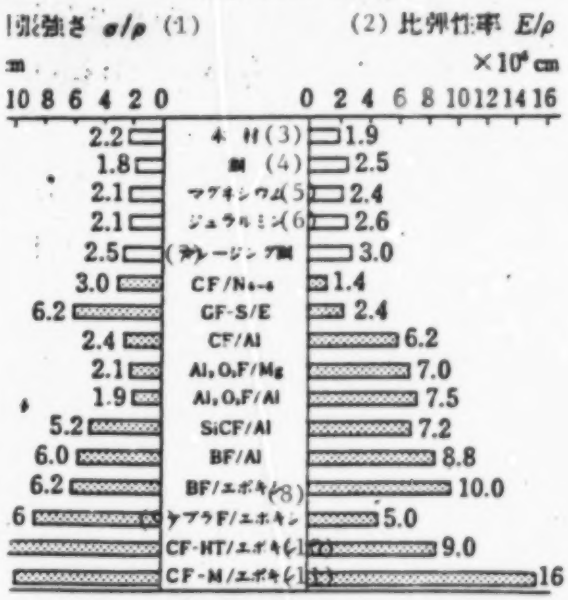
During those several years since 1965, the FRP industry in Japan achieved a spectacular market expansion. This expansion resulted mainly from substantial growth in the market of the FRP bathroom units for hotels and multi-story

apartments, the introduction of FRP into the hulls of fishing boats in building the vessels, and a sizable growth in the markets of other products such as water tanks, tanks to purify water as well as septic tanks for sewage systems, and various kinds of large-sized tanks and containers for other kinds of uses, with all of these tanks and containers made with FRP.

Figure 1. A comparison of specific tensile strength and specific elasticity rate between conventional materials and composite materials.

Key:

1. specific tensile strength σ/ρ
2. specific elasticity rate E/ρ
3. lumber
4. steel
5. magnesium
6. duralumin
7. maraging steel
8. BF/epoxy
9. Kebler F/epoxy
10. CF-HT/epoxy
11. CF-M/epoxy
12. ("Material Technology-17, Composite Materials" authored by Masao Doyama and Ryoichi Yamamoto, The University of Tokyo Publishing House, pp 6)



(金山凡男・山本良一編『材料テクノロジー17 複合材料』東京大学出版会 P.6) (12)

Figure 2. Classification methods of composite materials.

A method depending on the ingredients of a composite material and the way in which the ingredients are combined or mixed.

- A method based on the kinds of matrix involved (plastics, metals, concrete, ceramic, glass, and others).
- A method based on the kinds of reinforcement material involved (glass fiber, carbon fiber, metal fiber, alumina fiber, silicon carbide fiber, whiskers, etc.).
- A method of classification based on the way in which the ingredients are combined or mixed (GFRP, CFRP, FRM <as published>, and others).

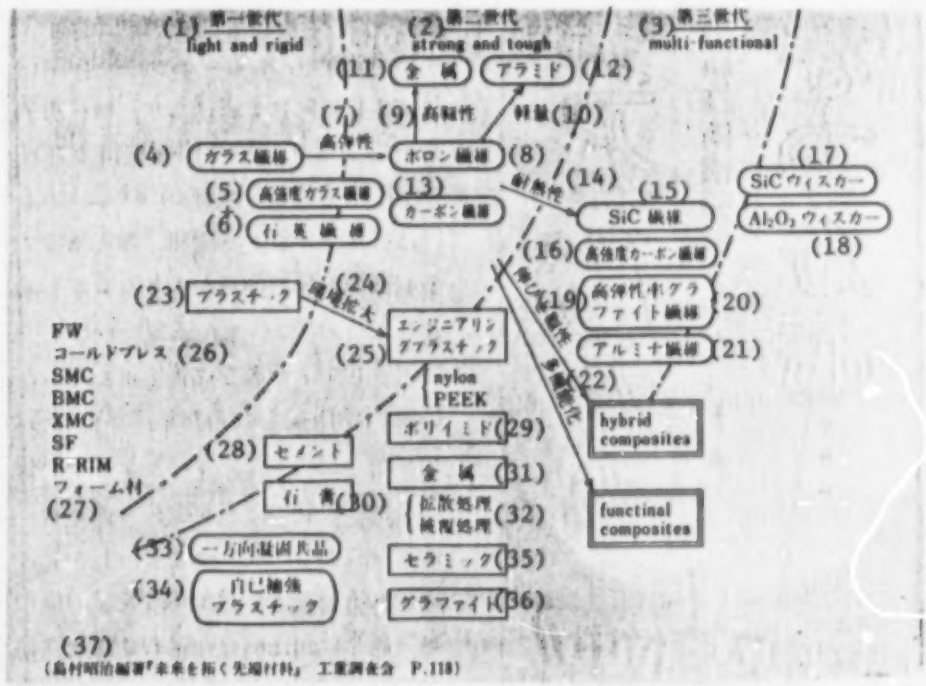
A method of classification depending on production methods.

- Production of a composite through a consolidation of several different materials. (Involves the process of coupling a reinforcement material to the matrix or creating a composite by laminating those composite ingredients involved. There is little chance that the quality of the base material will be affected as a result of the coupling or lamination.)
- Creation of a composite through a formation process. (This process causes the property and physical quantities of the composite ingredients involved to be transformed substantially as a result of the process. Such a structural change as multi-phase structure is formed.)

Table 1. Classification of matrix materials for the production of reinforced composite materials and of composite materials which are being manufactured utilizing those matrix materials.

Matrix materials	Composite materials
wood	plywood, laminated lumber, particle board, fiber board, wood-plastic composite material, wood-cement material
plastic	laminated film, artificial leather, foam material, electronic circuit substrate, hybrid material
metal	FRM (Fiber Reinforced Metal), PSM (Particle Strengthened Metal Alloy), DSM (Diffusion Strengthened Metal), one-way freezing eutectic alloy, magnetic composite material, functional composite material (wear-resisting alloy, electron collecting material, vibration absorbing ferrite plate, etc.
concrete	FRC (Fiber Reinforced Concrete), plastic concrete
ceramic and other inorganic materials	whiskers strengthened ceramic, ceramic foam, laminated glass, glass fiber reinforced carbon, gypsum composite material, optical fiber, foam glass

Figure 3. Development trends of composite materials.



Key on following page.

Figure 3 Key:

1. 1st generation: light and rigid
2. 2d generation: strong and tough
3. 3d generation: multi-functional
4. glass fiber
5. high-strength glass fiber
6. silica fiber
7. high elasticity
8. boron fiber
9. high toughness
10. light weight
11. metal
12. Aramid
13. carbon fiber
14. heat-resisting capability
15. SiC fiber
16. high-strength carbon fiber
17. SiC whiskers
18. Al_2O_3
19. toughness and extensibility
20. graphite fiber of high-elasticity rate
21. alumina fiber
22. multi-functionalization
23. plastic
24. expansion of applicable environs
25. engineering plastic
26. cold press
27. foam material
28. cement
29. polyimide
30. gypsum
31. metal
32. diffusion treatment, coating treatment
33. one-way freezing eutectic alloy
34. self-strengthened plastic
35. ceramic
36. graphite
37. ("High-Tech Materials Under Development" authored by Shoji Shimamura, Kogyo Chosa Kai pp 118)

The industry's shipments of its FRP products continued to increase steadily every year until they peaked at 190,000 tons in 1973. But the steady upward swing was abruptly interrupted due to the international oil crisis, and the domestic FRP industry was forced into a serious slump in shipment volume. Despite this, however, demand for FRP began to pick up gradually again in the years after the oil crises, particularly from the car manufacturing industry and the office automation equipment manufacturing industry partly as a result of the FRP industry's efforts to develop new fields of application for FRP. Now Japan's FRP industry is entering a period of sharp growth for the second time after the pre-oil crunch boom.

Materials for FRP Manufacturing

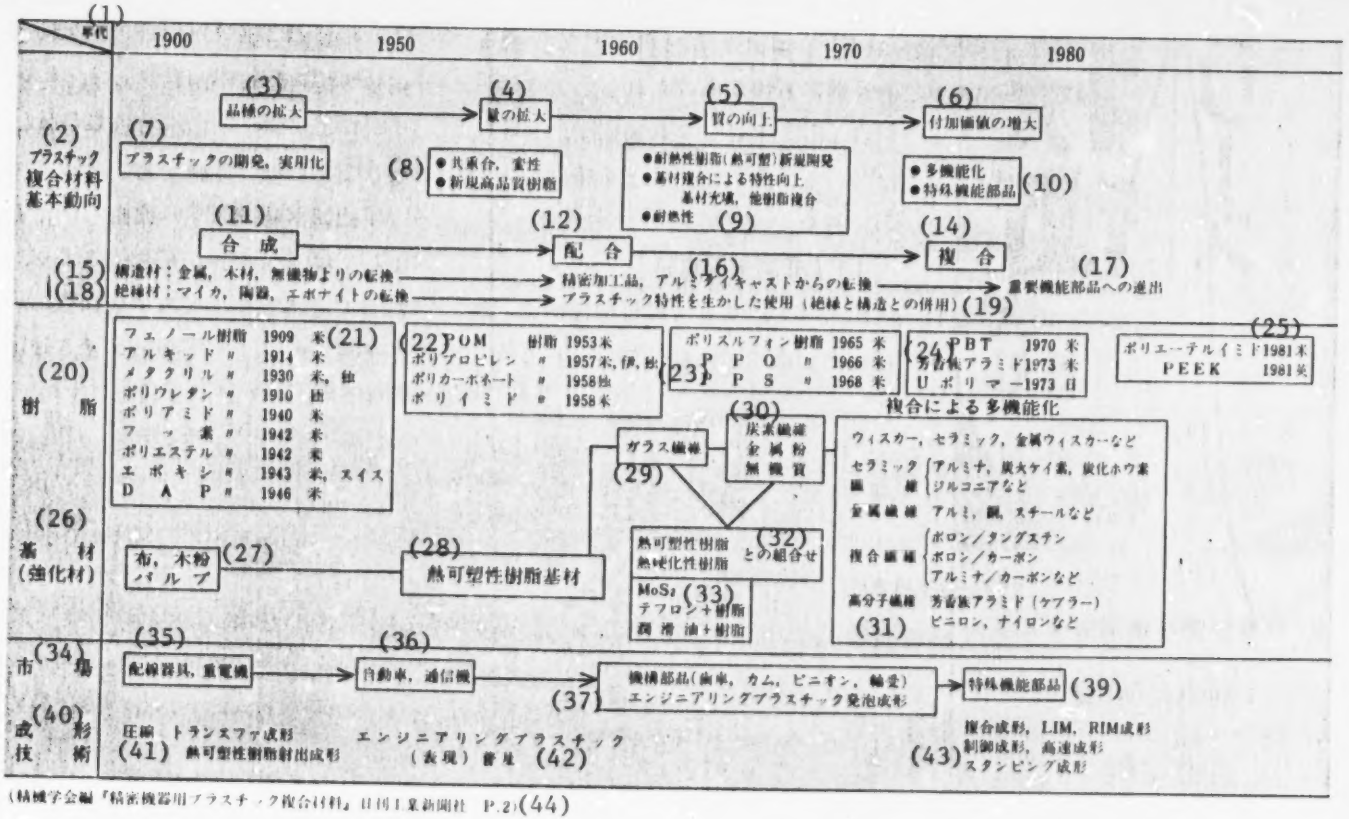
Table 3 is the classification of various kinds of materials used to manufacture FRP.

In the following sections of this article, we will describe the present state of progress in the development of different kinds of resins used as matrix material in the production of FRP and various other kinds of materials which are being utilized as reinforcement, and the features of those resins and reinforcement materials.

1) Resin for FRP Production

The resins which are utilized in the production of FRP are divided into two major categories--thermoplastic resins and thermosetting resins.

Table 2. Matrix materials for the production of fiber reinforced plastic and development trends of reinforcing materials.



（精機学会編『精密機器用プラスチック複合材料』日刊工業新聞社 P.2）(44)

Key:

1. years
2. basic movement in development of composite plastic material
3. expansion of product line
4. quantitative expansion
5. qualitative improvement

[Key continued on following page.]

6. increase of added value
7. development of plastic and its practical application
8. * copolymerization, denaturation
   * new high-quality resin
9. * development of new heat-resisting resin (heat plasticization)
   * improvement of characteristics through introduction of reinforcement material, replenishment of composing materials, introduction of other kinds of resins
   * heat-resisting capability

Table 2 Key continued:

10. * multi-functionalization
    * special function parts
11. synthesis
12. mixing
13. --
14. compounding
15. structural materials--metals, lumber, conversion from inorganic substance
16. precision-processed goods, conversion from aluminum die-casting
17. advancement into category of useful functional parts
18. insulator--mica, procelain, conversion of ebonite
19. utilization, making use of features of plastic (as insulator as well as structural object)
20. resins
21. phenol resin 1909 United States
    alkyd resin 1914 United States
    methacrylic resin 1930 United States, Germany
    polyurethane resin 1910 Germany
    polyamide resin 1940 United States
    boron resin 1942 United States
    polyester resin 1942 United States
    epoxy resin 1943 United States, Switzerland
    DAP resin 1946 United States
22. POM resin 1953 United States
    polypropylene resin 1957 United States, Italy, Germany
    polycarbonate resin 1958 Germany
    polyimide resin 1958 United States
23. polysulfone resin 1965 United States
    PPO resin 1966 United States
    PPS resin 1968 United States
24. PBT 1970 United States
    aromatic group Alamid 1973 United States
    U polymer 1973 Japan
25. polyether imide 1981 United States
    PEEK 1981 Britain
26. reinforcement materials
27. cloth, pulp, wood powder
28. thermoplastic resin reinforcement material
29. glass fiber
30. carbon fiber, metal powder, inorganic substance
31. * whiskers, ceramic, metal whiskers, etc.
    * ceramic fiber--alumina, silicon carbide, boron carbide, zirconia, etc.
    * metal fiber, aluminum, copper, stainless steel, etc.
    * composite fiber--boron/tungsten, boron/carbon, alumina/carbon, etc.
    * polymer fiber--aromatic group Aramid (Kevlar, vinylon, nylon, etc.)
32. combination of thermoplastic resin and thermosetting resin
33. MoS_2, Teflon + resin, lubricant + resin
34. market
35. wiring equipment, heavy electric machinery
36. automobile, radio communications equipment
37. mechanical parts (gear, cam, pinion, bearing), engineering plastic foaming
38. --
39. special functional parts
40. molding technology
41. compression, transfer molding, thermoplastic resin injection molding
42. engineering plastic (popular expression)
43. composite molding, LIM molding, RIM molding, controlled molding, high-speed molding, stamping molding
44. ("Composite Plastic Materials for Application to Precision Equipment and Machinery" compiled by Seiki Gakkai, Nikkan Kogyo Shimbun, pp 2)

Table 3. Classification of the materials constituting fiber reinforced plastic.

Materials constituting the plastic	Kind of material	Materials utilized
Matrix resins	Thermosetting resin	Unsaturated polyester resin, epoxy resin, phenol resin, vinyl ester resin, etc.
	Thermoplastic resins	Polyamide (nylon), polycarbonate, ABS resin
Reinforcing materials	Inorganic fiber	Glass fiber (GF), carbon fiber (CF), asbestos fiber
	Organic fiber	Vinylon fiber, acrylic fiber, polyamide
	Other kinds of reinforcing materials	Metal fiber, whiskers, composite fiber
Other kinds of materials	Filler, setting agent, promotional agent, parting agent	

Thermoplastic resins are the kind that either melts or hardens when heat is applied. Such resins either turn into a fluid state or change their original shape as a result of the heat applied. As resins in the category of thermoplastic resins, the representative ones are vinyl chloride resin, vinyl acetate resin, acrylic resin, polyamide, polyethylene, and fluororesin.

On the other hand, thermosetting resins are the kind that hardens above certain temperatures when they are subjected to heat. These resins permanently lose some of their physical features which they had before being heated. With such resins, once they have hardened as a result of heating, they never turn into a liquid state even if they are heated again. Phenol resin (bakelite), urea resin, melamine resin, unsaturated polyester resin, and epoxy resin are the representative resins in the category of thermosetting resins.

Usually thermosetting type resins are utilized mainly for the production of FRP.

(1) Unsaturated Polyester Resin

Unsaturated polyester resin contains unsaturated acid such as maleic anhydride or phthalic acid. By adding saturated polybasic acid such as phthalic anhydride and isophthalic acid, polyhydric alcohol such as propylene glycol and (or?) ethylene glycol are obtained. Unsaturated polyester resin is a resin in liquid form which can be obtained by dissolving polyhydric alcohol and unsaturated

alkyd, which can be produced by esterifying (what?), in the (solution?) of such polymeric monomer as styrene monomer.

As a method to set unsaturated polyester resin the radical polymerization method is being utilized. In this method, the setting is carried out by bridging unsaturated polyester resin with vinyl monomer like styrene. As catalysts used to promote the setting process, either naphthenic acid cobalt, dimethylaniline, or benzoyl peroxide is utilized depending on the temperature at which the setting takes place. In order to realize proper gelation time suitable for a particular method of molding of the resin, it is important to pay due attention to the temperature of the room where the setting is carried out and to the adjustments of the catalysts and the agents to promote the setting process to ensure maximum efficiency (translator's explanation).

In addition to the above-mentioned method for carrying out the setting of unsaturated polyester resin, there are also other methods available by which the radical molymerization is carried out. They involve the process of projecting either ultraviolet rays or radiation at the resin for setting. All of these methods have already been put into practical application.

The chemical features of unsaturated polyester resin have been found most suitable for the production of FRP. For this reason, this resin is the most popular among those being presently utilized in the production of FRP in Japan, and it is now used in about 90 percent of the total output of FRP in the country. In 1983, the production of unsaturated polyester resin stood at 190,000 tons, of which 70 percent was used for manufacturing FRP.

With the field of application of FRP expanding appreciably in recent years, users have increasingly been demanding a diversification in the characteristics of FRP so that they can choose the most suitable type of FRP for their application. In the following sections of this article, we will touch briefly on the recent movements in the industry.

(a) Making FRP Fire-Resistant

FRP's application fields include its usage as housing structure material, creating various housing-related equipment and facilities, and application in the field of transportation. The FRP to be utilized in these fields of application is naturally required to be fire-resistant.

Fire resistance in unsaturated polyester resin has been realized by adding or mixing with the resin substances such as halogen group elements, phosphorus compound, or inorganic fillers, including hydrate alumina. When inorganic fillers are utilized to impart fire resistance ability to unsaturated polyester resin, they are required to be added in relatively large dosages. Recently, a new method to make the resin fire-resistant has been utilized. The method calls for applying a layer of a certain kind of paint on the surface of FRP products. Such a coating produces an inert gas when it is exposed to fire, and this causes the formation of a foam layer which in turn works to protect the FRP products from fire by insulating them from the heat of fire.

(b) Corrosion-Resisting Resin

In recent years, demand for FRP to use in tank in supply systems of water for drinking and other purposes, for brewing tanks, pipes, and manufacturing other kinds of goods have been on the increase in Japan. When unsaturated polyester resin is used to produce these products, the resin is required to have good corrosion-resisting ability. It is expected that demand for the FRP which has a good anti-corrosion capability and weatherability would further increase in the future.

At present, there are a number of methods available to improve corrosion-resisting ability in unsaturated polyester resin. Those methods require reducing the coupling density of the ester involved, reducing or closing the end group, introducing hydrophobic type acid or hydrophobic type glycol, and making a careful choice of monomer.

Different kinds of unsaturated polyester resins which are quite corrosion-resistant have already been put on the market by several producers. They include a product tradenamed Derakane produced by Dow Chemical, Epocry II by Shell Chemical, and the products belonging to the epoxy acrylic resin category or vinyl ester resin category which are being manufactured by domestic makers such as Hitachi Chemical and other manufacturers.

On the other hand, as a resin having weatherability, the resin which contains an ultraviolet rays absorbent such as salicylate derivative, which imparts weatherability to resins, has been available on the market.

(c) Heat-Resisting Resin

Ordinarily, heat-resisting unsaturated polyester resin is manufactured by adding isophthalic acid to the resin. When phthalic anhydride acid was utilized as an additive instead, the breaking of the principal chains of the ester involved takes place when the resin containing it is heated, causing a sublimation of the phthalic anhydride acid. But when isophthalic acid is used, no such phenomenon can be observed.

(2) Epoxy Resin

At present, epoxy is the second most popular resin in use for the production of FRP.

Table 5. Resins used in the production of heat-resisting fiber-reinforced thermal plastic.

Material / Character-istics / Resin Names	Tensile strength (kgf/cm^2)	Elongation rate before tensile break (%)	Temperature of heat transformation (°C)
Polyamide-imide	2000	5.4	271
Polyether ether ketone	2150	3	300
Polyamide/bis-marimide resin	1000		320

Epoxy resin is a compound which has at least more than two epoxy groups within a single molecule. It is divided into glycygyl (phonetic) type epoxy resin and non-glycygyl type epoxy resin.

More than 90 percent of the epoxy resins currently being manufactured are of the bisphenol A glycygyl type. This type of epoxy resin constitutes the mainstay of the resins currently being utilized for the production of FRP.

To cause the setting of epoxy resin solution, there are three different methods employed by the manufacturers at present. They are the catalytic polymerization method, coupling method, and a method in which epoxy resin is caused to react as a polyohl (phonetic) with (what?).

In an effort to further improve the heat-resisting ability of FRP, research on novolak type epoxy resin for use in the production of FRP has been conducted by the industry. And the introduction of brominated epoxy resin is also under study for the production of fire-resisting FRP.

(3) Vinyl Ester Resin (Epoxy Acrylate Resin)

Vinyl ester resin which can be created by causing bisphenol A glycygyl type epoxy resin and unsaturated basic acid to react with each other, displays particularly good chemical-resisting capability. This produces vinyl ester resin which is utilized increasingly today in the production of various equipment and facilities used for the prevention of environmental pollution. The only drawback of the resin used for those application is its high cost. Compared with unsaturated polyester, utilizing vinyl ester in the production of those equipment and facilities is much costlier. At present, the comapnies which are marketing vinyl ester resin include Dow Chemical, Shell Chemical, Showa Highpolymer, and Dainippon Ink and Chemicals.

(4) Phenol Resin

The FRP which is produced using phenol resin is estimated to account for between 4 and 5 percent of the total FRP output. Phenol resin performs well in heat resisting, chemical-resisting as well as solvent-resisting. Among other advantages of this resin over other kinds of resins are its relatively low degree of degeneration in strength after the resin has been put into a boiling liquid for a certain length of time. However, phenol resin has disadvantages, too. The resin is brittle, takes longer for setting, and is not easy to color. At present, the resin is utilized primarily in the production of fishing rods, ski sticks, and pipes, among other products.

(5) Other Kinds of Resins

The several kinds of resins described so far in this article account for a majority of thermosetting resins which are used in the production of FRP. Among other kinds of thermosetting resins which have not been mentioned are polybutadiene resin and silicone resin. Polybutadiene resin excels in corrosion-resisting and has good electrical characteristics. On the other hand, silicone resin is superior in strength and has good electrical insulating

capability. These features explain why both polybutadiene resin and silicone resin are utilized in special fields of application such as the electric and aircraft industries.

2) Resin for FRTP Production

The term "Fiber Reinforced Thermal Plastics" (FRTP) has been coined for a plastic to distinguish it from FRP which utilizes thermosetting resins as material in production.

In the development of FRP, the main goal of development has been to produce a plastic with better strength. In the case of FRTP, researchers have been aiming at making an improvement not only in its strength but also its heat-resisting ability as well as stability in dimension.

Ever since glass fiber reinforced polyamide was put into practical use in the industry in 1956, various kinds of FRTP have been developed so far and some of them have already begun to be utilized in practical application.

Today the market of FRTP has grown to the point where about 100,000 tons of the plastic is used per year. FRTP is being utilized primarily in the production of products such as cars, electric appliances and electronic parts. In many of these products, FRTP is employed as a substitute for aluminum.

Table 4 shows a number of resins which are mainly utilized for the production of FRPT.

3) Reinforcement Materials

As reinforcement materials for utilization in the production of FRP, the following ones are chiefly used at present. They are glass fiber, carbon fiber, metal fiber, synthetic fiber, natural fiber, asbestos fiber, boron fiber, ceramic fiber, and whiskers.

Table 6 gives a number of reinforcement materials in fiber form and their characteristics. Glass fiber is one of the reinforcement materials popularly utilized in the production of FRP. With respect to tensile strength, glass fiber displays a fairly high level among long fiber materials, which is only second to that of steel and boron fibers. But in terms of elasticity rate, glass fiber displays the lowest level. This means that when a certain degree of stiffness must be attained in glass fiber, the thickness of the fiber must be increased. This is a major drawback in using glass fiber as reinforcement material.

In contrast to glass fiber, carbon fiber has a higher degree of elasticity and it is lighter. Due to these advantages, carbon fiber has begun to be utilized as a reinforcement material in which are now available on the market. Though it is inferior to E-type glass fiber, C-type glass fiber fares better in acid-resisting capability, and this is why it is utilized in the FRP in the production of tanks for holding various kinds of chemical fluids. S-type glass fiber is utilized in the production of the FRP which is destined for usage in the military, space, and aircrafts due to its higher strength and higher elasticity.

Table 4. Thermoplastic resins utilized in the production of glass fiber reinforced thermal plastic.

(4) 樹脂名 \ (1) 性質 (5) 区分	(2) 引張強さ (kgf/cm²) 伸び (%)				(3) 熱変形温度 (°C)	
	ナチュラル (6)	GFRTP	ナチュラル (6)	GFRTP	ナチュラル (6)	GFRTP
PBT resin	560	1400	300	4	58	212
nylon 6	740	1900	200	5.8	55~58	195
nylon 6-6	780	1700	60	3	58~61	248
dematuralized PPO	550~675	1020	50~60	4	130	143
polycarbonate	560~670	1320	100~130	4~5	129~141	146~149
polyacetal	620	1300	40~75	3	110	163
polysulfone	710	1300	70	2	175	185
polyallylate (?)	670	1370	1.6	1.3	138	260
	730	1050	70	10	164	167

("Composite Plastic Materials for Application to Precision Equipment and Machinery" compiled by Seiki Gakkai, Nikkan Kogyo Shimbun, pp 45-46)

Key:

1. material characteristics
2. tensile strength (kgf/cm^2), elongation (%)
3. temperature of heat transformation (°C)
4. resin names
5. distinction between natural and GFRTP
6. natural

Table 6. Kinds of reinforcement fiber used in the production of fiber-reinforced plastics and their characteristics.

	(1) 繊維の材料	(2) 径 (μm)	(3) 密度 (gf/cm³)	(4) 引張強さ (kgf/mm²)	(5) 比強さ (cm×10⁶)	(6) 弾性係数 (kgf/mm²)	(7) 比弾性係数 (cm×10⁶)	(8) 最高使用温度 (℃)	(9) 特徴
(10) ガラス繊維	Eガラス (11)	10	2.55	350	14	7400	290	700	素材の種類が多く、選択の範囲が広い。価格（340～2500円/kg）(12)
	高強度ガラス（S994）(13) 高弾性ガラス（YM-31A）	10 –	2.49 2.89	460 350	18 12.2	8800 11200	350 390	840 –	軍需用、航空宇宙開発など特殊な用途に用いる。価格が高い。(14)
(15) 多結晶質繊維	炭素繊維 （米国品）(16) （英国品）	7～10 8～10	1.58 1.91	180 220	11 12	28100 43600	1780 2280	3650 3650	比剛性が要求される用途に用いる。現在、価格は高い（5～10万円／kg）が将来下がる可能性がある。(17)
	アルミナ（Al_2O_3）(18) ジルコニヤ（ZrO_2）	– –	3.16 4.84	210 210	6.6 4.3	17600 35100	560 730	2040 2650	試作品 (19)
(20) 複合繊維	ボロン／タングステン (21) 炭化ケイ素／タングステン	102 102	2.63 3.46	280 210	11 6.1	38600 47100	1470 1360	2300 2690	主に航空宇宙開発関係の用途。複雑な形状の成形には不適 (22)
(23) 金属繊維	タングステン モリブデン 鋼 (24) ベリリウム	13 25 13 127	19.3 10.2 7.75 1.83	410 220 420 130	2.0 2.3 5.3 7	41500 36600 20400 24600	220 360 260 1350	3400 2620 1400 1280	樹脂強化には、現在用いられていない。(25)
セラミックウィスカー (26)	アルミナ（Al_2O_3） 炭化ケイ素（SiC）(27) 窒化ケイ素（Si_3N_4）	3～10 <1～3 –	3.96 3.21 3.18	2110 2110 1410	53 66 44	43600 49200 38700	1100 1540 1210	2040 2690 1900	繊維が短いのが欠点で補強効果が悪い。樹脂強化には実用化されていない。(28)
金属ウィスカー (29)	鉄 ニッケル (30)	– –	7.83 8.97	1340 390	17 4.3	20400 21800	260 240	1540 1450	試作品 (19)
(31) 合成繊維	ケブラー49 ケブラー29 (32) （ポリアミド系）	12 〃	1.45 1.44	370 280	25.5 19.5	13400 6300	920 440	260 262	比剛性の要求される用途には有望 価格（2000～50000円/kg）(33)
	ビニロン ナイロン (34) ポリプロピレン	– – –	0.91 ～ 1.39	35～100	–	200～2000	–	–	耐衝撃、耐摩耗、耐食性を要求される用途に用いる。(35)
(36) 天然繊維	アスベスト （クリソタイル）(37) （アモサイト）	0.03 ～0.17	2.4～2.6 3.2～3.3	56～ 70 11～120	–	–	–	493℃で結晶水放出(38)	耐アブレーション材、耐食性を要求される用途に用いる。(39) 安価である。
	綿 (40)	12～38	1.0～6.0	–	–	–	–	–	安価である。低価格FRPに使用 (41)

（精機学会編「精密機器用プラスチック複合材料」 日刊工業新聞社 P.28）(42)

Key:

1. kinds of reinforcement fiber
2. diameter of fiber (m)
3. density (gf/cm^3)
4. tensile strength (kgf/mm^2)
5. specific strength ($cm \times 10^6$)
6. modulus of elasticity (kgf/mm^2)
7. specific modulus of elasticity ($cm \times 10^6$)
8. maximum usable temperature (degrees C)
9. features
10. glass fibers
11. E-type glass
12. Many kinds of materials in glass production are available and this offers a list of a wide variety of materials from which the manufacturers can choose. Prices of the materials range from ¥340 to ¥2,500 per kilogram.

[Key continued on following page.]

Table 6 Key continued:

13. high-strength glass (S994), high-elasticity glass (YM-31A)
14. Used for special applications such as in the military, aircrafts and space. Price is high.
15. polycrystalline fiber
16. carbon fiber (made in the United States) (made in Britain)
17. Utilized where specific stiffness is required. At present, price is high, ranging from ¥50,000 to ¥100,000 per kilogram of the material. But there is a possibility that the price will go down somewhat in the future.
18. alumina (Al_2O_3), zirconia (ZrO_2)
19. experimentally created fibers
20. composite fiber
21. tungsten/boron, silicon carbide/tungsten
22. Principally aimed for use in aircrafts and space. Unsuitable in applications requiring those fibers to be molded into complex shapes.
23. metal fiber
24. tungsten, molybdenum, stainless steel, beryllium
25. At present, metal fibers are not being utilized in resins for the purpose of reinforcement.
26. ceramic whiskers
27. alumina (Al_2O_3), silicon carbide (SiC), silicon nitride (Si_3N_4)
28. The drawback of ceramic whiskers is that they are not good reinforcement material due to shortness of their fiber length. The whiskers are not utilized for reinforcement purpose in resins on a commercial basis.
29. metal whiskers
30. iron, nickel
31. synthetic fiber
32. Kevlar 49, Kevlar 29, (polyamide system)
33. Expected to be a promising reinforcement fiber when a specific stiffness is required. Prices range from ¥2,000 to ¥50,000 per kilogram.
34. vinylon, nylon, polypropylene
35. Utilized where shock-resisting, wear-resisting as well as corrosion-resisting abilities are required
36. natural fiber
37. asbestos, (chrysotile), (amosaito <phonetic>)
38. Emit water of crystallization at 493°C.
39. Suitable where abrasion as well as corrosion-resisting capability are required. Cost is low.
40. cotton
41. Cost is low. Utilized as a reinforcement material in low-priced fiber-reinforced plastic.
42. ("Composite Plastic Materials for Application to Precision Equipment and Machinery" compiled by Seiki Gakkai, Nikkan Kogyo Shimbun, p 28)

In addition to these glass fibers, new types of glass fiber which have an alkaline-resisting ability and are regarded as suitable for the reinforcement of cement products, are being developed. To impart alkaline-resisting capability, those new types of glass fiber contain zirconia and SiO_2-ZrO_2-R_2O.

Table 7. Glass contents in glass fiber.

(2) (単位：%)

(1) 種類と特長用途	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	B_2O_3	Na_2O	K_2O	Li_2O	BeO	TiO_2	ZrO_2	CeO_2	F_2
(3) E種(アルカリ電気絶縁用)	54.0	15.0		17.0	5.0	8.0	0.6							
(4) C種(化学用)	65.0	4.0		14.0	3.0	5.0	8.0	1.0						
(5) A種(含アルカリ一般用)	72.0	0.6		10.0	2.5		14.7							
(6) S種(高強度)	65.0	25.0			10.0									
(7) YM-31-A(高弾性)	53.7		0.5	12.9	9.0				3.0	8.0	8.0	2.0	3.0	
(8) ガラス綿用	59.0	4.5		16.0	5.5	3.5	11.0	0.5						
(8) ガラス綿用	59.5	5.0				7.0	14.5				8.0	4.0		2.0

(9) (村山宏著「FRP成形加工技術」 工文調査会 P.96)

Key:

1. Kinds of glass fiber features, and application fields
2. unit: percent
3. E-type (for alkaline electric insulation)
4. C-type (for chemical application)
5. A-type (for general application involving alkali)
6. S-type (high mechanical strength)
7. YM-31-A (high elasticity)
8. for production of glass cotton
9. "Technology for Molding and Processing of Fiber-Reinforced Plastic" authored by Hiroshi Murayama, Kogyo Chosa Kai, p 96

The features of glass fiber are as follows: (1) It has a very high tensile strength value and the strength increases as it becomes finer. (2) It excels in shock-resisting capability for it exhibits high strength and has a high extension rate within the breaking elasticity limits. (3) It has a very high elasticity rate and has no yield point. (4) Glass fiber is heat as well as fire-resistant and its strength is not affected up to a temperature of about 200°C. (5) The fiber exhibits good chemical resisting ability, except for boron and hot concentrated phosphoric acid. (6) In glass fiber production, the fiber length can be freely adjusted, and short as well as long fibers can easily be produced. (7) Glass fiber poses almost no health hazard to the human body.

When using glass fiber as reinforcement material in the production of FRP, the fiber must be treated first on the surface with the surface treatment agent in order to improve bonding between the fibers and the resins utilized for production of FRP.

(2) Carbon Fiber

Carbon fibers are divided into categories as shown in Table 8 (Table omitted). According to the table, first, carbon fibers are divided into high-performance type centering on PAN system fibers and general-purpose type centering on pitch system fibers. The high-performance type is further divided into highly tough type and highly elastic type.

Today it is estimated that the total world production of carbon fiber stands at around 2,000 tons per year. Of this production figure, the PAN system

fibers account for about 80 percent and the balance is the pitch system fibers. In Japan, Toray Industries, Toho Rayon and Kureha Chemical Industry form the top three producers. As they manufacture on such a large scale, the three Japanese producers control nearly 70 percent of the international market of carbon fiber. In terms of production capability, Japanese producers have a combined capacity of 2,850 tons per year, about three times that of the U.S. which stands at around 1,050 tons per year. It is expected that Japanese manufacturers will continue to lead other countries in production volume of carbon fibers in the coming years.

(3) Boron Fiber

The development of boron fiber started in the United States around 1960. In 1966, the fiber began to be practically utilized as structural material in aircraft production. In recent years, boron fiber has been introduced into fishing rods and golf club shafts, and the fiber is attracting increasing attention from the industry because of its promising usefulness.

The boron fiber utilized in these products is made by vapor coating 12 μm tungsten fiber with boron chloride or boron obtained by thermally decomposing organo boron, thus making the fiber vapor-coated into long fiber with a diameter of 0.1 mm. Boron fiber's strength is as high as three times that of carbon fiber. But it is heavier, hard, and snaps relatively easily. It is difficult to make a curved surface in products using boron fiber. The cost in producing boron fibers is about twice that of carbon fiber. For these reasons, it is expected that the application fields of boron fiber will be relatively limited.

(4) Alumina Fiber

Alumina fiber is produced by either treating alumina at high temperature or by applying a special treatment to turn it into polycrystalline fiber. The principal feature of alumina fiber is its very high heat-resisting capability which ranges from 1,300 to 2,000°C. In terms of strength, alumina fiber is inferior to carbon fiber, but it possesses better electric insulation capability. Due to these characteristics, it is utilized in the production of a kind of FRP which is beginning to be used in space and military applications. Research has been under way in an effort to introduce alumina fiber also into car production. Alumina fiber is regarded as one of the promising kinds of fibers as reinforcement material in the production of FRP. In Japan, the makers engaged in the manufacturing of alumina fiber include Denki Kagaku Kogyo which produces the short fiber and Sumitomo Chemical which turns out long fiber.

(5) Silicon Carbide Fiber

Silicon carbide fiber dubbed "miracle fiber" was originally developed by a professor at the state-run Tohoku University. Silicon carbide fiber can be obtained in uninterrupted form from the production system by polymerizing organic silicon compounds, melt-spinning the polymerized compounds, and then firing the spun object.

Silicon carbide fiber thus created is stronger than piano wire and has better high temperature characteristics than carbon fiber with a heat-resisting capability of up to 1,300°C. In addition to these advantages, silicon carbide fiber was good wettability with metals. Because of these features, it is utilized mainly as reinforcement material for metals. Research has been under way to make it possible to utilize silicon carbide fiber in ceramic and in resins as their reinforcement material.

Nippon Carbon is completing building its production facilities which would ultimately have a production capacity of 10,000 tons per month. The company is aiming to launch a full-scale commercial production of silicon carbide fiber for the first time in the world.

Meanwhile, Tokai Carbon, another of major Japanese reinforcement fiber maker, has succeeded in the development of whiskers.

(6) Organic Fiber

Alamid fiber developed by Du Pont of the United States has been gaining increasing attention within the industry in Japan as a substitute organic fiber which could be utilized to replace natural fiber and regenerated fiber like rayon.

In Japan, it is said that Teijin has embarked on a program to use this fiber as reinforcement material in some products on a commercial basis using its own technology.

(7) Steel Fiber

Among metal fibers are steel fiber and aluminum fiber. Details on these metal fibers will be disclosed possibly in future articles we may contribute to this publication Nikko Materiaru, when we will be given such an opportunity again in the future.

Present Situation in FRP Development

As described in the preceding sections of this article, FRP is a composite material which is made up of the matrix resins and the reinforcement fibers. By changing the composition between the resins and reinforcement fibers, different kinds of FRP can be manufactured. However, only a few of those have been put into practical use. Among those being utilized now, only three kinds of FRP--GFRP, GFRTP, and CFRP--account for a majority of Japan's FRP market.

In the following sections, we will discuss the current situation in the development of FRP products and their application fields. At the same time, the recent situation in the development of advanced FRP products will also be discussed.

1) GFRP

Glass Fiber Reinforced Plastic (GFRP) was developed first among reinforced plastic products. GFRP accounts for most fiber reinforced plastic products whose production volumes are listed in various trade papers under the product name FRP. As for the matrix resin in the production of GFRP, it is estimated that unsaturated polyester resin counts for more than 90 percent of those resins utilized in the production of FRP. However, recently other GFRP products with epoxy resin as the matrix material have also begun to appear on the market.

Table 9. Kinds of glass fiber reinforced plastic.

Materials	Form of glass as a reinforcing material	Resins	Contents of glass (weight percent)
hand lay-up mold	chopped (glass?) mat, cloth	polyester polyester	30-40 45-55
spray up molding	roving	polyester	30-40
perform, mat, matched die molding	roving, chopped mat	polyester	30-50
premix molding, including BMC	roving, chopped (glass?) strand	polyester, epoxy, melamine, phenol, silicone	10-45
prepreg molding	cloth		50-65
SMC molding	roving, chopped mat	polyester	29-36
drawing molding	roving	polyester epoxy	50-80
filament winding molding	roving	polyester epoxy	60-90

("Technology for Molding and Processing of Fiber Reinforced Plastic" authored by Hiroshi Murayama, Kogyo Chosa Kai, p 106)

Regarding the production method of FRP, there are traditional methods such as the hand lay-up method which involves lamination work by hands, and the spray-up method in which blowing by a spray gun is involved. In recent years, new mechanical GFRP molding technology has been introduced and the producers are using those new molding methods by choosing the most suitable for particular GFRP products they are going to manufacture. Those molding methods are: the cold press method in which the molding is carried out using the press; the resin ink jet method in which a resin in liquid form is injected into a mold filled with reinforcement glass fibers; the matched die method in which the molding is carried out by applying heat and pressure to the GFRP production materials which are placed into a metal mold; the continuous drawing method; the continuous panel molding method for the production of corrugated as well as flat-surfaced plates; and the filament winding method. The matched die method is further divided into the MMD method, SMC method, and the BMC method.

Among the varied methods used today in the production of GFRP, the hand lay-up method is still the most popular. However, considering the fact that until 4 or 5 years ago about 60 percent of GFRP production had been carried out using this method, but today the ratio has declined appreciably, this indicates that automation and introduction of mechanical molding machines have made progress in the industry in the past several years.

2) CFRP

The practical application of CFRP to a number of commercial products started around 1973 when the carbon fiber reinforced plastic began to be utilized for the production of sports and leisure items such as skis, tennis rackets, golf clubs, and fishing rods. The industry's efforts to develop new fields of application of CFRP stepped up since the early 1980's.

As carbon fibers utilized for the production of CFRP, the fibers belonging to PAN system are most popularly used at present. Those carbon fibers are being utilized for reinforcement after being processed as prepreg, cloth, filament winding, or spread roving.

Table 11 lists the kinds of resins which are being utilized as matrix material for the production of GFRP [as published].

As shown in Table 10, the advantages of CFRP over other kinds of fiber reinforced plastics are its light weight, high mechanical strength, relatively strong stiffness, good wear-resistance capability, good characteristics in electric conductivity, x-ray penetrability, and good corrosion-resisting ability. The CFRP's light weight results from the relatively low density of materials composing it. The high mechanical strength means that CFRP also excels in tensile strength, and the CFRP's strong stiffness has something to do with its high elasticity rate.

Table 10. Characteristics of fiber reinforced plastic as a typical composite material.

(1) 繊維	(2) アルミナ (Al_2O_3) 1)	(3) シリコンカーバイド 1)	炭(4)素	(5)ガラス
(6) 引張強さ ($kg \cdot mm^{-2}$)	260	250	280	180
(7) 弾性率 ($t \cdot mm^{-2}$)	25	18	23	7.4
(8) 繊維径 (μm)	9	10	7	10
(9) 表面処理	(10) 処理せず	(10) 処理せず	(11) 理	(10) 処理せず
FRP	AFRP	SFRP	CFRP	GFRP
(12) 密度 ($g \cdot cm^{-3}$)	2.4	2.3	1.5	2.0
(6) 引張強さ ($kg \cdot mm^{-2}$)	170	110	150	120
(7) 弾性率 ($t \cdot mm^{-2}$)	13	10	13	4.5
(13) 曲げ強さ ($kg \cdot mm^{-2}$)	180	160	170	120
(14) 圧縮強さ ($kg \cdot mm^{-2}$)	150	160	110	46
(15) 層間せん断 ($kg \cdot mm^{-2}$)	10	10	8~13	10

注：1) 住友化学，2) 日本カーボン（ニカロン）

(16) (幸山昌男・山本良一編「材料テクノロジー17 複合材料」東京大学出版会 P. 72)

[Key on following page.]

Table 10 Key:

1. kind of fiber
2. alumina (Al_2O_3)*
3. silicon carbide**
4. carbon
5. glass
6. tensile strength ($kg \cdot mm^{-2}$)
7. elasticity rate ($t \cdot mm^{-2}$)
8. diameter of fiber (μm)
9. surface treatment
10. not treated
11. treated
12. density ($g \cdot cm^{-3}$)
13. bending strength ($kg \cdot mm^{-2}$)
14. compressive strength ($kg \cdot mm^{-2}$)
15. interlayer shearing ($kg \cdot mm^{-2}$)
16. ("Material Technology-17, Composite Materials" authored by Masao Doyama, The University of Tokyo Publishing House, p 72)

* Sumitomo Chemical Co, Ltd

**Nicalon (phonetic) by Nippon Carbon Co, Ltd

Table 11. The matrix resins utilized for the production of glass fiber reinforced plastic (GFRP).

Resin types	Production method of FRP	Names of resins utilized
Thermosetting resin (GFRP)	Prepreg	Epoxy (mainstay resin), unsaturated polyester, vinyl ester, polyimide
	SMC	Epoxy, unsaturated polyester, vinyl ester
Thermoplastic resin (GFRTP)	Prepreg	Polyether sulfone, polyester, polyether ether ketone
	Injection molding	Nylon 6, nylon 66, PBT, polycarbonate, ABS, PPS, and others

Due to these merits of CFRP, it has been used in a wide range of products and the application fields are expected to expand still further in the future. Table 12 gives the names of products in which CFRP has already been introduced. CFRP is now one of the high-tech industrial materials which have a promising future in their prospective usefulness as new industrial material.

3) FRTP

FRTP first came into being after FRP belonging to the polyamide system was developed in 1956.

As mentioned in the previous passage of this article, an FRP which has been produced using thermoplastic resins (TP) as matrix material is called FRTP. As reinforcement material, glass fiber is being utilized most widely at present. But carbon fiber and metal fibers are also being employed.

At present, a number of companies are engaged in the production of fiber reinforced plastics on a commercial basis with the combinations of the matrix resins and the kinds of reinforcement materials varying from producer to producer. Toray Industries is producing polyamide and imide, ICI is manufacturing PPS and PEEK, and Mitsui Petrochemical Industries is making polyamide bismarimide resin.

FRTP combines the features of thermoplastic resins and those of glass fiber or carbon fiber, depending on which of the reinforcement materials is utilized. Compared with metals, thermoplastic resins have an advantage in specific gravity, corrosion-resisting capability, and electric insulation ability. But thermoplastic resins are inferior to metals in mechanical strength, stiffness, and heat-resisting capability. Consequently, FRTP which incorporates either glass fiber or carbon fiber as reinforcement material, displays mechanical strength which matches that of metals and, at the same time, exhibits overall features which surpass those of metals.

At present, FRTP is used in the production of car transporting vehicles in parts of the vehicles such as the exterior surface, inside walls of the compartments, and the engine rooms. Reinforced plastic is also being used to produce mechanical parts and electric as well as electronic parts.

5) Other FRP Products

As for high-tech FRP, there are hybrid FRP, Metal Fiber Reinforced Plastics (MFRP), Boron Fiber Reinforced Plastic (BFRP), and Aramid Fiber Reinforced Plastic (AFRP).

(1) Hybrid FRP

Hybrid FRP employs a combination of glass fiber and carbon fibers as reinforcement material. Depending on the way the reinforcement material is combined with matrix resins, hybrid FRP is divided into the so-called in-layer type and inter-layer type. As the matrix resin, epoxy resin is utilized the most at present. Hybrid FRP is deemed suitable for use in applications where good material involved are required, such as in building construction, marine application, and the production of various industrial members.

(2) MFRP

MFRP is one kind of fiber reinforced plastics in which metals fibers such as stainless steel fiber or aluminum fiber is utilized as reinforcement material.

Stainless steel fiber reinforced plastic has been developed to produce car brake pads as a substitute for asbestos pads. In addition to this, other kinds of MFRP have been developed in which a combination of aluminum fiber and glass fiber is employed as reinforcement material to create an MFRP with good thermal conductivity. Aisin Seiki is producing this kind of MFRP. An MFRP which carries a metal filler is being developed, which combines the features of resins and metals, including electric conduction capability. The development of this MFRP will be further stepped up in the future.

Table 12. Application fields of carbon fiber reinforced plastic (CFRP) composite material.

Features	Application Fields
light weight high elasticity rate high mechanical strength	Space and aircrafts, automobiles, textile industry machinery, fly-wheels, centrifugal separators, sports and leisure articles (golf clubs, angling rods, tennis rackets), tools and equipment
dimension stability	Space industry application (transponder antenna, etc.), micrometer, timing belt, ruler
vibration absorber	Audio equipment, musical instruments, driving shafts in automobiles, leaf springs, leisure equipment and facility
electrical characteristics (heat generation, prevention of static electricity)	Brewing tank, plastic molding facility, static electricity prevention material, motor brush, electrode
corrosion resisting capability	Chemical plant, collector electrode
wear-resisting ability	Bearing, brush material
x-ray penetrability	X-ray photographic plate cassette, medical x-ray bed
heat-resisting capability	Rocket parts, turbine engine parts, brake disc for aircrafts

("Material Technology-17, Composite Materials" authored by Masao Doyama, The University of Tokyo Publishing House)

Table 13. Production volume of fiber reinforced thermal plastic.

(3)(単位 トン)

(1) 樹脂名	(2) 用途分類 (4) 輸送機械	(5) 電機電子	(6) 機械	(7) その他	(8) 計
ポリアミド (9)	2,220	2,200	563	136	5,119
ポリアセタール (10)	646	590	100	0	1,336
ポリカーボネート (11)	108	1,996	647	383	3,134
PET系 (12)	450	2,100	300	0	2,850
PBT	1,402	4,232	635	128	6,397
ポリプロピレン (13)	14,268	5,043	366	7,193	26,870
AS樹脂 (14)	4,280	1,385	5	1	5,671
ABS樹脂 (15)	24	990	505	46	1,565
その他 (16)	9	498	49	0	556
(8) 計	23,407	19,034	3,170	7,887	53,498

(通産省，昭和53年度高機能樹脂需要構造調査報告書より) (17)

[Key on following page.]

Table 13 Key:

1. resin names
2. classification in accordance with application field
3. unit: ton
4. transportation machinery
5. electric & electronic fields
6. machinery
7. others
8. total
9. polyamide
10. polyacetal
11. polycarbonate
12. PET system
13. polypropylene
14. AS resin
15. ABS resin
16. others
17. The features in this table are based on a report on demand for highly functional resins in fiscal 1978, which was announced by the Ministry of International Trade and Industry.

FRP Market Outlook

To conclude this article, we will refer briefly to the expected trend in the FRP market in Japan.

In Japan, the production of FRP started in the latter part of the 1950's. Full-scale manufacturing by the industry did not come until around 1969. In 1973, during which year high economic growth rates in Japan peaked, the domestic production volume of FRP totalled 200,000 tons and the shipment volume stood at 190,000 tons. However, during the following 2 years, the shipment volume of FRP continued to decline due to the adverse effects of the international oil crisis, and shipment of the plastic bottomed out in 1975. In that year, the shipment volume stood at only 60 percent of the peak production year which the industry experienced years ago. But in the years after 1976, shipment of FRP began to pick up again, and then the growth has continued, supported by an expansion of the market and the industry's efforts to develop new markets. In 1978, the shipment volume of FRP surpassed 200,000 tons, and in 1983, shipment increased to a record 250,000 tons.

However, compared with the level of demand for FRP in foreign countries, FRP demand in Japan is still considerably low and because of this, it seems there still is room for more growth of the FRP market in the country in the coming years.

But it must be noted that the production figures mentioned above were confined to the GFRP utilizing unsaturated polyester resin as the matrix material. When the FRP utilizing other kinds of resins is included, production figures rise up to 330,000 to 340,000 tons per year.

These estimated production figures have been reached partly from calculations which were made assuming that yearly production of FRTP, which is believed to be only second to GFRP in production volume, has lingered at a range between 70,000 and 80,000 tons in the recent past. The estimation of yearly output of FRTP at present was based on the data announced by the Ministry of International Trade and Industry (MITI) in fiscal 1978 which estimated the domestic production of the plastic at 54,000 tons per year then. In doing the calculation, the yearly production figure of 70,000 to 80,000 tons of FRTP was adopted assuming that the production of the plastic has continued to grow since the MITI announced

the data. At the same time, the overall production of FRP of about 340,000 tons per year was also reached by deducing it from an estimated domestic shipment volume of CFRP in the recent past, which is expected to stand around 600 tons per year.

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ENERGY

MITI SEES 'PERCEPTION GAP' ON COOK INLET OIL

OW020035 Tokyo KYODO in English 0017 GMT 2 Nov 85

[Article by Sei Ogawa]

[Text] Tokyo, Nov 2 KYODO--A high official of the Ministry of International Trade and Industry (MITI) said Saturday there is apparently a "perception gap" between the United States and Japan on the lifting of an export ban on Alaska's Cook Inlet crude oil.

The Agency of Natural Resources and Energy official said that the U.S. government has officially said there is no precondition attached to a Presidential order to start exporting Cook Inlet crude.

But there is a Congressional move afoot in Washington to demand increased imports of agricultural and other products from the U.S. by Japan in exchange for lifting an export ban on the American crude, said the official who declined to be named.

U.S. President Ronald Reagan also told Japanese Prime Minister Yasuhiro Nakasone in a meeting late last month in New York when he informed Nakasone of his decision on the Cook Inlet issue that the U.S. wants Japan to increase imports of American coal.

The Japanese official said export of Cook Inlet crude to Japan, when realized, would improve the trade imbalance between the U.S. and Japan, but that would benefit the U.S. more than Japan.

If the U.S. thinks lifting of the export ban was mainly to the benefit of Japan, there is a "perception gap," he said.

However, Noboru Hatakeyama, director general of the Agency's Petroleum Department, said the import of Alaskan oil would contribute to Japan's diversification of oil supply sources as well as to the reduction of huge trade surpluses with the U.S.

Hatakeyama told KYODO News Service that it would have been more significant if the move had come in a tight oil supply situation.

Faced with a relaxation in the oil demand-supply situation, Japan is now receiving calls from China, Mexico, Indonesia and Middle East countries to increase or at least maintain the current level of crude imports from each of them, he said.

"Japan would have to make a sacrifice to import crude from the U.S." Hatakeyama said.

Hatakeyama said MITI is now calmly watching the situation as the timing, price and quantity of exports of Cook Inlet crude are still unclear.

He said a Japanese decision to import Cook Inlet crude should be made on a commercial base.

Commerce Secretary Malcolm Baldrige announced October 28 in Washington that President Reagan had lifted an existing export ban on Cook Inlet oil.

A commerce department spokesman also reportedly said that the U.S. would probably become an exporter of crude oil to Japan and other Asian countries early next year.

Exporting crude from Cook Inlet, located in southern Alaska, does not require a Congressional act, but only a Presidential order, because it does not use Alaskan pipelines to ship oil.

Lifting of the export ban could quickly lead to the export of some 5,900 barrels daily, because sales rights on that amount are held by the Alaskan state government.

But it is up to private interests whether the export would rise above that amount, MITI officials said. Cook Inlet has a daily output capacity of some 55,000 barrels.

The Japanese oil industry generally welcomes the U.S. decision as it is a step toward lifting of a Congressional ban on Alaska's North Slope and other oil fields, and means a diversification of oil supply sources.

An executive of Tokyo Electric Power Co., the prime oil consumer, said the U.S. move to lift the export ban is only significant as a symbol of the gradual removal of trade restrictions.

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CSO: 4307/002

ENERGY

JAPANESE OIL COMPANIES' INTERIM BUSINESS RESULTS HEAVILY IN RED

Tokyo MARUBENI PETROLEUM REPORT in English 1 Dec 85

[Text] Japan's 10 major oil companies that close their first half-year term in September have reported ¥57.2 billion in combined ordinary losses for the first half of fiscal 1985 (April-September 1985). The large red figure was due to a plunge in "C" fuel oil demand from electric utilities and a stagnation in the oil market.

During the first half, demand for gasoline and the middle distillates continued firm, but sales of "C" fuel oil to the electric utilities fell 5.4 percent this year, to 581.4 million barrels. This notable sales decline was a result of the progress made by the electric power industry in its fuel switching from oil to non-oil energy. In addition, the weak market took its toll on the combined sales of the 10 oil companies, which totaled ¥5,972.4 billion, down 7.8 percent from a year earlier.

Consequently, the profit picture was unimpressive. The stagnant market sent petroleum product prices at retail outlets nosediving, with the dip far exceeding the combined magnitude of the decline in crude prices and foreign exchange gains and expense reductions achieved by the oil companies. Thus most oil companies were forced to run substantial ordinary losses.

In the months ahead, the oil companies will probably do their utmost to pull the market out of the doldrums, while hoping that the strong yen seen since September will remain in place indefinitely.

10 Japanese Oil Companies'* Business Results
for Half-Year Term Ended September 1985

	First Half FY1985 (A)	First Half FY1984 (B)	(A)/(B) %
Sales	5,972.4	6,476.7	-7.8
Ordinary Profit/Loss	-57.2	6.7	--
of which Exchange Gain/Loss	-37.1	-25	--
Profit/Loss After Tax	-44.9	- 3.1	--
Sales Volume (mill. of bbl)	581	615	-5.4

Spot Crude Oil Imports at 32.4 Percent in the First Half of Fiscal 1985

Spot crude accounted for 32.4 percent of all crude oil imported by Japan in the first half of fiscal 1985, topping the 30 percent mark on a half-year basis for the first time ever, according to the Petroleum Association of Japan. Specifically, spot crude imports totaled 182 million barrels (996,000 barrels a day), the total imports being 563 million barrels (3,075,000 barrels a day). Thus crude oil's share was about 10 percentage points more than the 22.8 percent a year earlier.

Past statistics show that spot crude, which was responsible for only 5.3 percent of Japan's total crude oil imports in fiscal 1981, constituted 26.1 percent in fiscal 1984 (see MPR No 138). Spot crude imports continued their upward momentum in the current fiscal year, reaching an average 36.0 percent in the July-September quarter.

One factor that has pushed up spot crude's share to such a high level is that with the world oil supply-demand situation continuing slack over the past several years, spot crude prices have remained below the government selling prices of the producing countries. Another factor is that the Japanese oil companies, suffering from deteriorating business performances, tried to reduce crude procurement costs by refraining as much as possible from term-contract purchases at government selling prices. Furthermore, producing countries, beset by the difficulty of selling crude at their official prices, have recently stepped up sales on the spot market.

Since the oil supply-demand situation can hardly be expected to tighten any time soon, the Japanese oil companies will most likely press further ahead

*Nippon Oil Co., Ltd., Maruzen Oil Co., Ltd., Kyodo Oil Co., Ltd., Koa Oil Co., Ltd, Idemitsu Kosan Co., Ltd., Mitsubishi Oil Co., Ltd., Kyushu Oil Co., Ltd., Tao Oil Co., Ltd., General Sekiyu K. K. and Daikyo Oil Co., Ltd.

with the procurement of spot crude. But there is a new move among some producing countries, a move to link the term-contract prices with those of the spot market. If crude imports based on this type of term contract increase, the rise in spot crude's share of Japan's imports may slow down.

Trend in Spot Crude's Share of Japan's Crude Oil Imports

	First Half	Entire Year
FY 1982	9.2%	12.0%
1983	17.1	18.7
1984	22.8	26.1
1985	32.4	

September-end Oil Stockpile Levels Announced

According to the Ministry of International Trade and Industry (MITI), Japan's oil stockpiles, combining those carried by the private sector and the government, totaled 434.0 million barrels product equivalent (bpe), down 2.9 percent from a year earlier. This volume, comparable to 123.0 days' supply in terms of the 3,522,000 bpe a day recorded for the calendar year 1984, is smaller by 8 days' supply than the year earlier level.

Of the stockpile total, government stocks accounted for 109.4 million bpe, including the 4.8 million bpe added in September, this year's first buildup. Private-sector stocks, however, continued to decrease every month since May, coming to 324.6 million bpe at the end of September.

Recent Trends in Japan's Oil Stockpile Levels
(on Product Equivalent Basis)

	Private		Government		Combined	
End of Month	mill. of bbl	days supply	mill. of bbl	days supply	mill. of bbl	days supply
1985 April	337.1	96.0	104.6	30.0	441.9	126.0
May	338.4	96.0	104.6	30.0	443.0	126.0
June	336.5	95.0	104.6	30.0	441.1	125.0
July	333.4	94.0	104.6	30.0	438.0	124.0
August	328.0	93.0	104.6	30.0	432.6	123.0
September	324.6	92.0	109.4	31.0	434.0	123.0

Notes: 1. Crude oil stocks are to be expressed in terms of product equivalent figures converted at the rate of 1 barrel of crude = 0.95 barrel of product.
2. All government stocks are kept in the form of crude oil.
3. Days supply in fiscal 1985 is to be calculated on the basis of the nation's 1984 oil demand--3,522,000 barrels a day.

The reduction in the private stocks came about as a result of the oil companies' practice of holding their stocks to the lowest possible levels. One reason for this practice was to reduce the cost of carrying stocks. Another reason was that sluggish demand made it unnecessary to carry large inventories.

As already reported in this issue, the oil companies sank into the red for the first half of the current fiscal year. The slack trend in the oil market is expected to carry through into the winter, the peak-demand season. It seems that the oil companies will have no choice but to cut their inventories down to a bare minimum.

Japanese Oil Statistics

Import of Crude Oil by Sources (Unit: 1000 BBL)

	October, 1985		Jan.-Oct.		Share in 1984
	Volume	Share %	Volume	Share %	%
Saudi Arabia	10,438	10.5	193,118	18.9	27.2
Kuwait	493	0.5	11,633	1.1	2.3
Neutral Zone	5,210	5.2	65,292	6.4	5.9
Iran	9,249	9.3	72.703	7.1	7.0
Iraq	1,739	1.8	12.401	1.2	0.4
UAE	21,319	21.5	215.944	21.1	15.3
Qatar	8,091	8.2	61,279	6.0	6.0
Oman	9,442	9.5	91.659	9.0	6.3
Others	--	--	--	--	--
Middle East	65,981	66.5	723.979	70.8	70.2
Brunei	1,871	1.9	15,413	1.5	2.2
Indonesia	12,003	12.1	118,392	11.6	13.1
Malaysia	5,375	5.4	33,001	3.2	3.0
S.E. & F.E. Asia	19,249	19.4	166,806	16.3	18.3
Mexico	4,372	4.4	39,753	3.9	4.3
Others	365	0.4	3,894	0.4	0.4
North & South America	4.737	4.8	43,647	4.3	4.7
Nigeria	--	--	--	--	--
Lybia	--	--	--	--	--
Algeria	--	--	--	--	0.3
Others	2,407	2.4	12,597	1.2	0.4
Africa	2,407	2.4	12.597	1.2	0.7
China	6,169	6.2	66,578	6.5	6.0
USSR	64	0.1	926	0.1	0.0
Others	642	0.6	7,687	0.8	0.1
Total	99,249	100.0	1,022,220	100.0	100.0

Source: MITI

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ENERGY

IDEMITSU TO EXPAND PRC OFFSHORE OIL DRILLING

OW081259 Tokyo KYODO in English 0829 GMT 8 Oct 85

[Text] Tokyo, Oct 8 KYODO--Idemitsu Oil Development Co. said the company and its oil drilling subsidiary, Idemitsu China Oil Development Co., Tuesday signed a contract with China to acquire an additional offshore oil development district in the Beibu offshore area.

An Idemitsu spokesman said the agreement with China National Offshore Oil Corp. calls for Idemitsu to start prospecting the 1,280 square kilometer district, which is between Vietnam and Hainan Island and called Tongking Bay in Vietnamese, from December.

Serious drilling in the district, adjacent to area previously acquired by the companies, will start from October next year, the spokesman said.

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CSO: 4307/002

ENERGY

MITI URGES MORE INVESTMENT BY POWER, GAS FIRMS

OW151351 Tokyo KYODO in English 1223 GMT 15 Oct 85

[Text] Tokyo, Oct 15 KYODO--Minister of International Trade and Industry Keijiro Murata Tuesday asked representatives of electric power and gas companies to make additional investments in plant and equipment toaling 1.1 trillion yen to boost domestic demand and help solve trade friction, officials said.

Shoichiro Kobayashi, chairman of the Federation of Electric Power Companies and president of Kansai Electric Power Co., said the nation's nine electric power firms will make every effort to raise their capital investment by 1 trillion yen by the end of fiscal 1988.

Combined capital investments by the nine electric power firms are now expected to total some 10 billion yen in the next three fiscal years, the officials said.

Hiroshi Watanabe, vice chairman of the Japan Gas Association and president of Tokyo Gas Co., said three major gas firms in Tokyo, Osaka and Nagoya will make additional capital investments of 100 billion yen in the next three years.

Murata asked Kobayashi and Watanabe for their cooperation in implementing the government's new package of measures announced earlier in the day to expand domestic demand and raise imports, the officials said.

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ENERGY

MITI TO SUBMIT GASOLINE IMPORT DECONTROL BILL

OW041127 Tokyo KYODO in English 1106 GMT 4 Oct 85

[Text] Tokyo, Oct 4 KYODO--The Minister of International Trade and Industry (MITI) has decided to submit to the next extraordinary session of the Diet a bill to facilitate imports of refined petroleum products, including gasoline, MITI officials said Friday.

The bill will follow recently released recommendations of the petroleum council, which suggested placing no limits on the quantity of imports but restricting the right to import to refiners, according to Toshihiko Tanabe, director of the Policy Planning Division of the Petroleum Department at the Natural Resources and Energy Agency, a MITI affiliate.

Trading houses will not be permitted to import gasoline because they would create excessive competition with deficit-ridden oil refining companies, which depend on gasoline as their only profit-making product, Tanabe said.

Considerations of maintaining a stable supply of all petroleum products for national security reasons also contributed to the decision to limit imports to refiners, Tanabe said.

The European Community and the United States have recently requested that Japan open up its gasoline market to imports in order to share the burden of refined products soon to be exported from Mideast oil producing countries for the first time.

Prime Minister Yasuhiro Nakasone asked MITI Monday to speed up procedures to facilitate the import of gasoline.

Assuming the bill passes the Diet in the extraordinary session starting in mid-October, gasoline imports could begin as soon as early next year.

However, industry analysts predict only a small volume of imports, perhaps 5 to 10 percent of domestic demand, because the refining industry is suffering from overcapacity, running at only 60 percent of capacity.

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CSO: 4307/002

ENERGY

TDK AFFILIATE DEVELOPS NEW SOLAR POWER CELL

OW210741 Tokyo KYODO in English 0727 GMT 21 Nov 85

[Text] Tokyo, Nov 21 KYODO--Semiconductor Energy Laboratory Co., affiliated with TDK Corp., said Thursday it has developed a less costly solar power generating cell capable of changing sunlight into electricity more efficiently, paving the way to produce commercially viable solar power generators.

A spokesman for the laboratory called the new amorphous--non-crystal--photovoltaic cell a breakthrough, saying it will lead to wide use of solar power stations by electric power companies. Commercial production of the new cell is scheduled to start next fall, he said.

Photovoltaic cells generate voltage when radiant energy fall on the boundary between dissimilar semiconductors. Amorphous cells are expected to be used for large-scale power generating systems because they are more economical and efficient than costly crystal semiconductor cells which are now built into electric appliances such as calculators.

The laboratory made a square prototype--1 cm by 10 cm--consisting of 15 amorphous cells, using its laser technology. The laboratory claims the prototype can convert 9.9 percent of solar heat into electric energy, more efficient than conventional amorphous cells, which convert about 8 percent a spokesman said.

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CSO: 4307/002

NUCLEAR DEVELOPMENT

CONSTRUCTION BEGINS ON ENRICHED URANIUM PLANT

OW130327 Tokyo KYODO in English 0214 GMT 13 Nov 85

[Text] Ningyotoge, Okayama Pref., Nov 13 KYODO--The Power Reactor and Nuclear Fuel Development Corp. Wednesday started construction here of a plant to produce enriched uranium for use at a nuclear power station to be constructed in Aomosri Prefecture in northern Japan.

A prototype plant is aimed at developing mass production of the nuclear fuel using the centrifuge method, corporation officials said.

When completed in 1987, the new plant will produce enough fuel to operate a nuclear power station with maximum generation capacity of 1 million kilowatt-hours.

Another prototype plant with the same capacity will be built here next year.

Japan has been pushing production of enriched uranium using the centrifuge method as a national project since 1972.

In 1978, the governmental corporation completed a pilot plant to produce enriched uranium.

About 200 people, including corporation chief Noboru Yoshida and Ken Naito, vice parliamentary minister at the Science and Technology Agency, were present at ceremonies marking the start of plant construction.

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CSO: 4307/002

NUCLEAR DEVELOPMENT

MITI ADVISORY GROUP TO WORK OUT NUCLEAR POLICY

OW110919 Tokyo KYODO in English 0858 GMT 11 Nov 85

[Text] Tokyo, Nov 11 KYODO--An Advisory Council to the International Trade and Industry minister decided Monday to work out a long-term nuclear energy policy by next July.

The nuclear subcommittee of the Advisory Committee for Energy, headed by Vice Chairman Isamu Yamashita of the Federation of Economic Organizations (Keidanren), will discuss various policies and measures surrounding the nation's nuclear energy industry up to the year 2030, when Japan is expected to establish its own nuclear fuel cycle and introduce a fast breeder reactor on a full-fledged basis, council officials said.

The 35-man subcommittee will also discuss the best combination of energy sources, including fossil fuels, for Japan's needs, as well as environmental problems, the officials said.

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CSO: 4307/002

SCIENCE AND TECHNOLOGY POLICY

COCOM TO EASE CONTROL ON HIGH-TECH EXPORTS TO PRC

OW110249 Tokyo KYODO in English 0240 GMT 11 Nov 85

[Text] Tokyo, Nov 11 KYODO--The Coordinating Committee for Export to the Communist Bloc (COCOM) is likely to ease considerably its controls on China-bound exports of high technology products in December, government officials said Monday.

The Paris-based, 15-nation watchdog on Western exports to communist countries will allow member countries to export some 40 manufactured goods including almost all computers and numerically-controlled machine tools to China without obtaining COCOM approval, the officials said.

They said the action is aimed at increasing exports of Western high technology to China, which has already been placed under less severe restrictions than other communist nations.

COCOM will however, tighten its control on exports of industrial robots and possibly biotechnology products to the communist world, they said.

The COCOM list of export restrictions varies from country to country, with Japan currently controlling 164 items, including weapons and atomic power facilities.

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POLITICAL AND SOCIOLOGICAL

KYODO DESCRIBES 'TIGER DEN' OF 1986 POLITICS

OW020623 Tokyo KYODO in English 0548 GMT 2 Jan 86

/Article by Antonio Kamiya: "1986 Politics: Go to the Tiger Den"/

/Text/ Tokyo, 2 Jan KYODO--Nineteen eighty-six marks a year of change in Japanese politics, both for the Liberal-Democratic Party and the Japan Socialist Party, the two largest political parties in Japan.

For the ruling LDP, it is the widely speculated changing of guard at the prime minister's office, and along with it, possibly, the style of how Japan will be ruled at elast for the rest of the 1980's.

Yasuhiro Nakasone, one of most flamboyant prime ministers to emerge in postwar Japan, is expected to go when his second 2-year term as LDP president ends in October, and none of the aspirants--by volition and or by temperament--is anywhere as close in style.

With the JSP, the change is more heartrending, though. Once again, the number one opposition party is deeply embroiled in the soul-searching question of what socialism means in Japan today.

Should the Soviet blend of socialism, coated with Marxism-Leninism, remain the working model for the Japanese socialist? Or should the West European model of social democracy become the new socialist banner in a country where an overwhelming majority of the electorate identify themselves with middle-class values?

To Masashi Ishibashi, the pragmatic JSP chairman, the answer is obvious: the JSP must break off from its Marxist-Leninist ideological cocoon and join the political mainstream, even to extent of a partnership with the conservatives, if necessary.

Such an eclectic vision, however, doesn't sit well with the ideological purists within the party. In a showdown at last Decmeber's party convention, they scuttled Ishibashi's brainchild, refusing to budge from the established socialist tenets.

Ishibashi, however, is not one to lick his wounds, lyding low. He has promised to fight back, and an all-or-nothing confrontation is expected to come to a head when the party resumes the broken-off convention in late January.

At the LDP, on the other hand, the real stirs for the perennial once-every-2-year power struggle won't come until much later, at least not until the cherry blossoms are past their bloom.

For the record, all the principal rivals who have staked their claim to Nakasone's job have said they won't rock the LDP boat until the Tokyo economic summit is over. That is early May. After that, as they say, it is a free-for-all.

Within the LDP, the growing consensus is that Nakasone, who has been serving longer than any prime minister in the past decade, should make way for a breed of what is known as Japan's "new leaders."

Has the prime minister fallen out with the voters? Far from it: Nakasone remains by far the most popular postwar premier, his approval ratings exceeding 60 percent in repeated opinion soundings.

His flamboyant personality apart, Nakasone has earned high marks among the Japanese voters by breathing fresh air into the stale, though stable, style of politicking in Japan. Instead of just following by consensus, he thrives by kicking up political storms.

Indeed, not since Kakuei Tanaka stunned the nation with his ill-advised "reform the Japanese archipelago" scheme has any politician come as close as Nakasone in daring the devil.

Soon after he came to power in November 1982, Nakasone promised to "overhaul" Japan's postwar politics, like the way, he said, you do with an old car.

And the records show he is no empty talker: after 2 years of meticulous preparation, he lobbed off NTT, the telecommunications monopoly, from government hands and promised to repeat the end deed with the lossmaking railway system.

That is the way how the government gets rid of the deadwood and breathes competition into government enterprises.

Too much rote-learning in Japanese schools? That too must change, Nakasone says, and promptly set up a blue-ribbon panel to "overhaul" the education system.

Why must Japan, as the government ordered in 1976, limit defense spending within 1 percent of the nation's GNP instead of basing on more objective military needs? Nakasone thought that irrational and reinstituted the 5-year military planning.

While Nakasone has so far managed to impress the electorate with his high-profile leadership, his rivals pale in contrast. Indeed, what they advocate is not much different from the steady-as-you-go sort of management style as preferred by Japan's business managers.

"Charisma is not needed in Japan," says Kiichi Miyazawa, who was retained as chairman of the LDP executive council.

"We don't need the sort of leader who says, 'follow me,'" says Noboru Takeshita, the finance minister.

Shintaro Abe, the foreign minister, also differs. "High profile is not my style," he says.

These are the "new leaders"--all retained in their key party and cabinet jobs in the yearend reshuffle--who are expected to take over the reins of the LDP government, when Nakasone goes.

Despite his sustained popularity with the voters, the problem with Nakasone is that he lacks a powerful political base within his own party, and all his three rivals are ganging up against him.

On top of all the political pressure, Nakasone also faces a technical hurdle: party rules say the president cannot serve more than two consecutive terms.

The easiest way out, they figure, would be for Nakasone to step down graciously and seek to pull strings behind the scene, as seems to be the form preferred by other predecessors.

Or else, Nakasone may choose to flout the conventional rule and force the issue, by taking his cause to the nation through a general election. A resounding victory at the polls could silence the most powerful critics.

As the Japanese adage says, you have to go into the tiger den if you want to get the tiger cub.

There is perhaps some food for thought for both Nakasone and his socialist pal, Ishibashi, as the year of the tiger unfolds.

/12228
CSO: 4100/67

POLITICAL AND SOCIOLOGICAL

NAKASONE MAINTAINS LOW POLITICAL PROFILE

OW281401 Tokyo KYODO in English 0934 GMT 28 Dec 85

/Text/ Tokyo, 28 Dec KYODO--Prime Minister Yasuhiro Nakasone the maverick in postwar Japanese politics, is keeping a low profile these days.

The reason is, of course, political: with less than a year to go in his second term as president of the ruling Liberal-Democratic Party, his party rivals are ready to spring on their prey.

As prime minister without a solid political base, Nakasone, 67, is dependent on the support of both friends and foes within the party to get his wishes implemented.

With ailing former Prime Minister Kakuei Tanaka--Nakasone's one-time political patron--out of the scene, that support is far from automatic.

And the writing is already on the wall.

Nakasone suffered a major political setback with the recent debacle over Nakasone-backed legislation to redistribute some Diet seats.

As the LDP, together with the New Liberal Club, its coalition partner, controls a mere eight-seat majority in the lower house, the revolt by the smallest faction within the LDP could topple the government.

The appointments of the top party executives and the cabinet Saturday--with the principal party and cabinet jobs remaining unchanged--reflect Nakasone's dilemma: the wish to continue as "primus inter pares" as prime minister while playing to conflicting interests within the party.

For Nakasone, the stakes are high.

As host of next year's economic summit of the seven principal industrial nations, Nakasone needs peace on the domestic political front to ensure "success" of the event, both for the sake of a prestige-conscious nation and as an important political chip for the prime minister himself.

According to LDP rules, Nakasone is barred from serving a third conservative term as party leader, and hence as prime minister.

However, there is persistent speculation that he could call a snap general election to consolidate his power if the May summit comes off well.

While wary of Nakasone's intentions, the principal contenders for the prime minister's job have vowed against rocking the LDP boat at least until the end of the summit. The quid pro quo, some obsevers say, is a low Nakasone profile.

While his recent predecessors may have been happy to step down and pull strings from behind the scenes, Nakasone has made it plain that he has lots of work still to be done--by himself.

Despite his small power base, Nakasone has managed to chip away at the bloated government bureaucracy, while opening the Japanese market to make Japan a respected member of international society, and building up Japan's defense capability.

Nakasone may be sneered at by his critics as a "weather vane" for his shifting political position, but he has pursued his political goal with dogged consistency: "overhauling Japan's postwar politics."

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POLITICAL AND SOCIOLOGICAL

KYODO CENSUS SHOWS VOTING DISTRICT DISPARITY MORE

OW211043 Tokyo KYODO in English 1003 GMT 21 Dec 85

/Text/ Tokyo, 21 Dec KYODO--The disparity between population numbers in constituencies for the House of Representatives has widened to a maximum margin of 1 to 5.11 between rural and urban areas in a demographic shift that calls for a more radical shuffling of Diet representation than contemplated so far by the ruling and opposition parties, according to an analysis of census figures by KYODO News Service.

The study, based on data released by local authorities for a national census taken in October, indicates that at least 10 seats would need to be removed from thinly populated rural constituencies and given to the big cities in order to cut the gap in parliamentary representation to within a ratio of 1 to 3--which the Supreme Court has ruled is the maximum constitutionally tolerable.

Both the ruling Liberal-Democratic Party (LDP)and the opposition camp, working on data from the previous census taken 5 years ago, had proposed shuffling six seats in a bid to correct the representational gap.

There was a failure to reach agreement on proposed legislation, however, during the current Diet session, which closed Saturday.

As a result, both the LDP's so-called "six-six" bill and a joint bill submitted by four opposition parties were scuttled, leaving the way clear for new proposals in the upcoming Diet session in order to reflect the latest changes in Japan's demographic movements.

According to KYODO's study of the 1 October census, the biggest lower house representational gap remains between the number five constituency in Hyogo Prefecture, a rural area represented by three Diet members, and the number four constituency in Chiba Prefecture, another three-member electoral district which includes a cluster of growing cities just east of Tokyo.

The preliminary figures of the latest national census show that each Diet member of Hyogo number five represents a population of 109,684, while a Diet member from Chiba number four represents 561,023 people, which is 180,000 more than the previous census.

This means the population gap in terms of Diet representation between Hyogo number five and Chiba number four was widened to a ratio of 1 to 5.11, compared to the 1-to-4.54 ratio recorded in the previous census.

The KYODO study also shows that population movements over the past 5 years have made the number of people represented by each Diet member in 23 electoral districts (out of a total of 130) more than 3 times that in Hyogo number 5.

In a ruling in July, the Supreme Court said representation in each lower house consituency must not exceed a ratio of 1 to 3.

To come within this ratio, 10 overrepresented constituencies, all in thinly populated rural areas, would each have to yield one of their Diet seats to the underrepresented constituencies, with Chiba number four getting two more seats.

Other electoral districts that would get more seats if the 1-to-3 rule was applied are: Chiba number 1 district, Hokkaido number 1 district, Osaka number 3 district, Kanagawa number 3 and 4 districts, Saitama number 2 and 4 districts and Tokyo number 11 district.

One glitch in this shuffling formula is that it would result in the creation of seven constituencies with only two lower house seats, a departure from the three-to-five seat medium electoral system which Japan follows.

All opposition parties have voiced strong opposition to two-seat constituencies, which they say would favor the LDP.

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POLITICAL AND SOCIOLOGICAL

CABINET RECEIVES PRELIMINARY CENSUS FIGURES

OW240421 Tokyo KYODO in English 0359 GMT 24 Dec 85

/Text/ Tokyo, 24 Dec KYODO--Japan's population reached 121,047,196 on 1 October, according to preliminary census figures reported to the cabinet Tuesday.

It increased 3,986,800 or 3.4 percent from the previous census in 1980, the slowest growth rate for 40 years, according to the figures released by the Management and Coordination Agency.

The world's total population is now estimated at a little over 4.8 billion by the United Nations. Japan has the seventh-largest population of any country, following China with 1.06 billion, India 761 million, the Soviet Union 278 million, the United States 238 million, Indonesia 165 million and Brazil 136 million.

Japan's male population was 59.5 million, and the number of females was 2 million more at 61.66 million.

The population grew by only 0.7 percent annually during the past 5 years, a low growth rate which is common among developed countries, according to the report.

Japan marked its highest annual population growth rate of 2.9 percent in the first "baby boom" just after the World War II. The next highest rate of increase was in the second baby boom in the early 1970's with 1.9 percent.

The number of households has increased 5.8 percent to 38.11 million since 1980, while the average number of family members fell from 3.25 to 3.18, showing that the "nuclear family" of parents and 1 or 2 children is becoming more common.

The population increased sharply in three prefectures--Chiba, Saitama and Nara--but depopulation continued in small cities and towns, the figures showed.

Japan's population reached 100 million in 1966, and topped 110 million in 1971. However, it took over a dozen years to increase by an additional 10 million, the report showed.

The Health and Welfare Ministry has predicted Japan's population will continuously increase until 2005 to 2010, reaching 133.6 million. It will then begin a gradual decrease.

By prefecture, the population of Tokyo reached 11,826,262, up 1.8 percent from 1980, followed by Osaka at 8,668,114, up 2.3 percent; Kanagawa 7,431,621, up 7.3 percent; Aichi at 6,455, 121, up 3.8 percent, and Hokkaido 5,679,432, up 1.9 percent.

The 23 wards of Tokyo remained the most densely populated city at 8.35 million, unchanged from 1980. Yokohama ranked second at 2.99 million, up 7.9 percent, Osaka third at 2.64 million, down 0.3 percent, and Nagoya fourth at 2.12 million, up 1.4 percent.

Sapporo, Kyoto, Kobe, Fukuoka, Kawasaki, Kitakyushu and Hiroshima all had populations of over 1 million, the figures showed.

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POLITICAL AND SOCIOLOGICAL

OPPOSITION DISAPPOINTED WITH NEW CABINET

OW281213 Tokyo KYODO in English 1153 GMT 23 Dec 85

/Text/ Tokyo, 28 Dec KYODO--Opposition parties described the reshuffled cabinet of Prime Minister Yasuhiro Nakasone as offering nothing new and being "disappointing."

The number one opposition Japan Socialist Party said the new cabinet does not warrant hopes for the people and is "an assortment of wooden blocks" collected from factions within the ruling Liberal-Democratic Party.

The JSP said it would continue its confrontation with the Nakasone administration, which it said is running against the trend of times, a move toward global disarmament.

Komeito termed the new cabinet as nothing new.

It will be hard for the new cabinet to overcome a host of major problems at home and abroad, the party said.

The moderate Democratic Socialist Party said the new cabinet appears to be designed to balance power among intraparty factions.

It said it would urge the government to refrain from drastically increasing defense spending and to guard against an economic policy involving tax increases.

The Communist Party said the new cabinet is the worst since World War II and is designed to strengthen the military alliance between Japan and the United States.

The party said it would continue its confrontation against the Nakasone Government and try to forestall all "evil" policies which might be implemented by the new administration.

The United Democratic Socialist Party said the reshuffled cabinet laid bare the weakness of Nakasone's political leadership.

The New Liberal Club praised the new cabinet as demonstrating the people's appreciation of a coalition system.

It said it will tackle the problem of revising the tax system in order to implement a large-scale tax cut to strengthen the people's trust in politics.

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POLITICAL AND SOCIOLOGICAL

NAKASONE RETAINS ABE, TAKESHITA

Nakasone Cabinet Roster Formed 28 December

OW281101 Tokyo KYODO in English 1045 GMT 28 Dec 85

/Text/ Tokyo, 28 Dec KYODO--Following is the roster of the fourth Nakasone cabinet formed Saturday.

Position	Name	Age	Faction
Prime minister	Yasuhiro Nakasone	67	Nakasone
Justice minister	Seigo Suzuki	74	Fukuda
Foreign minister	Shintaro Abe	61	Fuduka (retained)
Finance minister	Noboru Takeshita	61	Tanaka (retained)
Education minister	Toshiki Kaifu	54	Komoto
Health and welfare minister	Isamu Imai	66	Suzuki
Agriculture, forestry and fisheries minister	Tsutomu Hata	50	Tanaka
International trade and industry minister	Michio Watnabe	58	Nakasone
Transport minister	Hiroshi Mitsuzuka	58	Fukuda
Posts and telecommunications minister	Bunsei Sato	66	Nakasone
Labor minister	Yu Hayashi	61	Suzuki
Construction minister	Takami Eto	60	Nakasone
Home affairs minister (chairman, National Public Safety Commission)	Ichiro Ozawa	43	Tanaka
State minister (chief cabinet secretary)	Masaharu Gotoda	71	Tanaka
State minister (director general, Management and Coordination Agency)	Masumi Esaki	70	Tanaka
State minister (director general, Defense Agency)	Koichi Kato	46	Suzuki (retained)
State minister (director general, Economic Planning Agency)	Wataru Hiraizumi	56	Suzuki

Position	Name	Age	Faction
State minister (director general, Science and Technology agency; chairman, Atomic Energy Commission)	Yohei Kono	48	NLC
State minister (director general, Environment Agency)	Yoshihide Mori	66	Komoto
State minister (director general, National Land Agency)	Heihachiro Yamasaki	74	Fukuda
State minister (director general, Okinawa Development Agency; director general, Hokkaido Development Agency)	Raishiro Koga	70	Tanaka
Director, Cabinet Legislative Bureau	Takashi Mogushi	65	(retained)

Parliamentary Vice Ministers Roster

OW281327 Tokyo KYODO in English 1307 GMT 28 Dec 85

/Text/ Tokyo, 28 Dec KYODO--Following is the roster of parliamentary vice ministers:

Position	Name	Age	Faction
Justice	Reijo Sugiyama	63	Tanaka
Foreign affairs	Yasuoki Urano	44	Suzuki
Finance	Tsugio Kumakawa	55	Nakasone
	Kiyoshi Kajiwara	64	Tanaka
Education	Iwao Kudo	64	Komoto
Health and welfare	Yuya Niwa	41	Suzuki
Agriculture, forestry and fisheries	Hiroichi Fukuda	71	Fukuda
International trade and industry	Takashi Tawara	60	Tanaka
	Kenichiro Otsubo	60	Suzuki
Transport	Shizuka Kamei	49	Fukuda
Posts and telecommunications	Masami Tanabu	51	Fukuda
Labor	Kampei Matsuo	58	Tanaka
Construction	Mamoru Nakajima	50	Tanaka
Home affairs	Kiyoshi Mori	60	Fukuda
Deputy chief cabinet secretary	Shunjiro Karasawa	55	Nakasone
Management and coordination	Hajime Funada	32	Tanaka
National land	Katsuhiko Shirakawa	40	Suzuki
Defense	Hiroshi Kitaguchi	55	Suzuki

Position	Name	Age	Faction
Economic planning	Hiroshi Kumagai	45	Tanaka
Science and technology	Eizaburo Maejima	48	Nakasone
Environment	Takashi Kosugi	50	New Liberal Club
Okinawa development	Tadashi Itagaki	61	Suzuki
Hokkaido development	Shoichi Watanabe	55	Suzuki

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POLITICAL AND SOCIOLOGICAL

NAKASONE ON TOPICS FOR TOKYO SUMMIT DISCUSSION

OW241321 Tokyo KYODO in English 1214 GMT 24 Dec 85

/Text/ Tokyo, 24 Dec KYODO--Prime Minister Yasuhiro Nakasone said Tuesday he will bring up the problem of stabilizing interest rates at an economic summit of seven industrial democracies to be held in Tokyo in May next year.

He mentioned this as one of main topics he has in mind for the summit, others being the world economy, U.S.-Soviet talks for world peace and disarmament, measures for developing countries, especially heavily indebted nations, and cooperation between Pacific and Atlantic nations.

Addressing a meeting of senior officials of the Federation of Economic Organizations (Keidanren), Nakasone said it is important for major powers to stabilize interest rates worldwide.

Noting the successful efforts for international monetary realignment initiated by the finance ministers conference of the group of five industrial nations in New York in September, the prime minister said this system of concerted efforts must be firmly maintained.

Japan will develop a policy on interest rates in such a way as to help debt-ridden developing nations in South American and Africa while adhering to the principle of free economy, he said.

The prime minister also said the summit will take on all the greater importance since it will immediately precede the second summit meeting between U.S. President Ronald Reagan and Soviet leader Mikhail Gorbachev.

He made it clear that Japan will seek to further cement the solidarity of the West on the occasion of the summit, stressing the necessity of keeping close contact with President Reagan to ensure full cooperation toward the goal of peace and disarmament.

Referring to East-West relations as a whole, Nakasone said he is heartened by the fact that the emergence of the Gorbachev regime in the Soviet Union has created a strong momentum toward dialogue.

On Japan-Soviet relations, the prime minister said Japan will cooperate so that the visit of Soviet Foreign Minister Eduard Shevardnadze to Tokyo in January will prove fruitful.

It is important for Japan to find a path of broad dialogue and mutual prosperity with the Soviet Union while holding fast to uncompromisable basic lines, he said.

Speaking at the same meeting, Yoshihiro Inayama, chairman of Keidanren, renewed his plea for voluntary adjustment of exports to ease trade friction with other countries.

He also criticized mounting calls for relaxation of the present belt-tightening fiscal policy to ease the deflationary impact of the recent appreciation of the yen and boost imports through expansion of domestic demand.

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POLITICAL AND SOCIOLOGICAL

NO POLITICAL STATEMENT EXPECTED AT TOKYO SUMMIT

OW220909 Tokyo KYODO in English 0900 GMT 22 Dec 85

/Text/ Tokyo, 22 Dec KYODO--Prime Minister Yasuhiro Nakasone has decided against issuing any political statement at the end of the annual summit of the seven democracies he will host in Tokyo next May, informed sources said Sunday.

Instead, the sources said, Nakasone is planning to give at a press conference a "chairman's summation" of political discussions to be conducted unofficially during the seven-nation summit.

They said the major reason for refraining from issuing a political statement is the objections expressed by France against importing a stronger political tone to the summit, originated 10 years ago mainly to discuss the world's economic problems.

France is a member of the summit group, along with the United States, Britain, West Germany, Japan, Italy and Canada.

Since the Soviet invasion of Afghanistan in late 1979, however, the summit has been gaining political significance through its shows of Western unity against the Soviet bloc.

This led to the issuance of the frist official joint political statement when the summit was held in Williamsburg in the United States in 1983.

Joint political statements were also issued at the successive summits in London in 1984 and Bonn this year.

But French President Francois Mitterrand expressed his strong objection at the Bonn summit against the issuance of the joint political document, on the ground that world political affairs should not be decided only by the seven countries.

The sources said that Nakasone chose not to disregard the objection of the French president as a successful hosting of the Tokyo summit could have a significant bearing on his management of Japan's domestic political affairs.

At the same time, however, the Japanese prime minister sees the importance of showing the world the unity of the Western industrial powers in view of the likelihood of increasingly active East-West contacts following the U.S.-Soviet summit between President Ronald Reagan and party chief Mikhail Gorbachev in Geneva last month.

Nakasone will thus try to have the improvement of East-West relations, nuclear arms control and other political issues actively discussed unofficially at dinners and luncheons during the coming seven-nation summit.

He is planning to announce the results of the unofficial discussions in the form of a "chairman's summation" at a press conference following the summit, the sources said.

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POLITICAL AND SOCIOLOGICAL

JSP CONVENTION ENDS WITH DEADLOCK OVER PLATFORM

OW181125 Tokyo KYODO in English 1036 GMT 18 Dec 85

/Text/ Tokyo, 18 Dec KYODO--The Japan Socialist Party (JSP) broke off a stormy 3-day convention Wednesday, unable to break a deadlock over a controversial party program that would mark a tentative shift toward a more pragmatic policy line.

The unprecedented decision to adjourn came at the end of a marathon final-day session at Tokyo's Kudan Kaikan, which was held up for more than 5 hours while the party leadership sought to iron out differences behind close doors.

In announcing the adjournment, the party leadership left open the date for calling the divided back convention into session.

The bickering centered on how the number one opposition party should seize power in the event of the ruling Liberal-Democratic Party (LDP) losing its majority in the Diet.

Except for a brief period in 1947-48, Japanese socialists have never been in government, and their parliamentary strength has been on the decline over the past decade.

The party leadership, now in the hands of a moderate wing under Chairman Masashi Ishibashi, argued in the convention for the necessity of shifting from reliance on the support of organized labor to a national party like the left of center Social Democrats in Western Europe.

Under a new party program officially known as the "new declaration," the party leadership was seeking a formal party mandate for a possible coalition that did not rule out a tieup with the LDP.

This coalition idea drew a barrage of criticism from the floor, with delegate after delegate charging that the party leadership had abandoned socialist principles.

Behind the argument over generalities lies a deep division over specific policies between the right and left wings of the JSP.

Since Ishibashi took the helm in September 1983, the JSP leadership has sought to steer a more pragmatic policy line, such as giving tentative recognition to the "Jietai"--Japan's Armed Forces--and reversing the party's strict antinuclear power policy.

However, the leftwingers said they wanted none of this, urging the party leadership to stick to the "traditional policies."

In a bid to break the deadlock over the "new declaration," the two factions held closed-door sessions in a small room while more than 380 delegates waited inside the convention hall.

"This is a typical JSP convention," one delegate noted wryly.

Bowing to pressure, the party leadership proposed some minor revisions such as asserting a primary role for the Socialist Party in any coalition scheme, JSP sources said.

However, the leftwingers found the proposition unacceptable, they said.

"We really don't mind the idea of coalition, but you have got to tell the party what you want to accomplish in a coalition. An unprincipled coalition is not acceptable to us," explained Airo Kitayama, a former JSP vice chairman who is closely identified with the left wing.

"Coalition with the LDP? The idea is simply unrealistic," said Shigeo Haihara, the chief ideologue for the "socialist association," the leftwing faction within the JSP.

The deadlock Wednesday was seen a major blow for Ishibashi, who has insisted that the "new declaration" be accepted by the convention "unanimously and without amendments."

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POLITICAL AND SOCIOLOGICAL

PRC ENVOY ON 'STRONG HOPE' AGAINST SHRINE VISITS

OW271301 Tokyo KYODO in English 1250 GMT 27 Dec 85

/Text/ Tokyo, 27 Dec KYODO--Zhang Shu, Chinese ambassador to Japan, Friday expressed a strong hope that Prime Minister Yasuhiro Nakasone will never again make an official visit to Yasukuni Shrine dedicated to the war dead.

Speaking before the Japan National Press Club Friday afternoon, Ambassador Zhang said that the prime minister's official visit to Yasukuni Shrine, if dealt with wrongly, would hurt the sentiments of Asians, including the Chinese, and expressed a hope that the Japanese prime minister will never again make an official visit to the shrine.

Ambassador Zhang said that the Yasukuni problem is one of the highly sensitive problems which remain between Japan and China 40 years after the unfortunate history between the two countries ended.

He implicitly appreciated moves in Japan to remove class-a war criminals, including former Prime Minister Hideki Tojo, from among the war-dead enshrined at the Yasukuni Shrine, and said that it won't be difficult to find ways to settle the Yasukuni problem if the Japanese people have a correct understanding of the past war and become aware of the fact that the Yasukuni issue impairs the feelings of Asians.

Ambassador Zhang said that a trade imbalance greatly in favor of Japan should be rectified in the form of an expanded equilibrium, and expressed the hope that Japan's trade surplus would not be expanded further.

On the 1988 Seoul Olympics, the ambassador expressed the view that North Korea's proposal that both South and North should be cosponsors is worth serious consideration.

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POLITICAL AND SOCIOLOGICAL

KYODO: YASUKUNI ISSUE PROBLEMATIC FOR NAKASONE

OW050640 Tokyo KYODO in English 0553 GMT 5 Jan 86

/Article by Hiroaki Furuno: "Yasukuni Issue Remains Nakasone's Achilles' Heel"/

/Text/ Tokyo, 5 Jan KYODO--Hundreds of thousands of people passed through the huge, imposing "Torii" gateway of one of Tokyo's Shinto shrines during the opening days of the new year, following custom by throwing coins into a box and clapping to invoke the spirits of the gods enshrined there.

But Yasukuni Shrine, a few minutes walk from the imperial palace, is unique in that the spirits it enshrines are those of some 2.4 million war dead, including Gen Hideki Tojo and 13 other class-a war criminals of World War II, some of whom were executed in accordance with sentences passed by the International Military Tribunal for the Far East.

The shrine was established in 1869 on the orders of Emperor Meiji for the consolidation of the souls of those who sacrificed their lives in helping to return political power from the Tokugawa Shogunate to the emperor. Besides Japanese who have died in wars since then, those enshrined include about 27,000 Taiwanese and 26,000 Koreans who were forced to join the Japanese Imperial Army in World War II.

The shrine, used for the glorification of war by militarists in the years up to 1945, became the center of an international diplomatic row last August, when Prime Minister Yasuhiro Nakasone became the first postwar premier to visit it in an official capacity.

Nakasone said his visit, marking the 40th anniversary of the end of World War II, was to console the spirits of the war dead who had sacrificed their lives for the state and to renew the nation's commitment to peace in a manner free from Shintoism. His comment overrides claims that the visit violated the constitutional separation of state and religion.

But it stirred bitter war memories in neighboring countries and threatened to revive widespread anti-Japanese sentiment. Students in several Chinese cities staged demonstrations in which they displayed placards criticizing Nakasone.

A leading Dietman in the ruling Liberal-Democratic Party (LDP), who asked not to be identified, said he saw the protests as a bargaining technique aimed at extracting concessions from Japan, mainly on trade and investment.

A group of six families of war dead recently filed a suit claiming total damages of 6 million yen (about 30,000 dollars) for "mental suffering" caused by Nakasone's visit.

Takashi Azuma, 62, whose brother was killed in Manchuria, northeast China, in the final days of the war and is enshrined at Yasukuni, said, "a religious institution is being exploited for political reasons, a rehabilitation of militarism."

Another group, made up mainly of Buddhists, has taken similar action. They say that the public expense of reimbursing Nakasone and other government ministers for a 30,000 yen dedication fee, customarily paid by worshippers, is against the constitution, which prohibits government officials from religious activity.

"The visit caused us spiritual damage in using our taxes," said a leader of the group, Kensho Sakakuni, 56.

Seven other citizens' groups in Hokkaido, Osaka, Kyoto, Fukuoka, Yamaguchi, Shimane and Kagoshima are preparing similar suits.

Teruo Tojo, 65, the son of General Tojo, said in an interview with KYODO News Service, "I don't care at all if the government abandons official visits to the shrine. It is the government that decided to make the visit an official one, without consulting families of war dead, and aroused the international protests."

Kenichiro Matsuoka, 71, the son of Yosuke Matsuoka, the wartime foreign minister branded also as a class-a criminal, is clearly upset by recent developments concerning Yasukuni. He asked, "Why are people making such a big fuss? Forty years have passed since then. Please allow them to rest in peace, will you?"

Was the visit worth all this controversy? Does Nakasone believe that he has now settled one of the more touchy postwar issues, which previous prime ministers had regarded as taboo?

Many Japanese think not. In fact, they are apparently rather indifferent to it. But a priest at the shrine responsible for protocol, Yasuhisa Arakida, declined to discuss the matter. He said, "We can't make a comment since the issue is so touchy."

Although to some extent Nakasone, a wartime navy officer and former defense chief, has fulfilled a cherished hope of people like Sumiko Nakai, 68, who lost her husband when the atomic bomb exploded in Hiroshima, he has run into heated controversy both at home and abroad by insisting on making the visit an official one.

But Nakai says, "Isn't it obligatory for the nation to pay official homage to war dead, who sacrificed their lives for the sake of the state? Our sorrows can't be healed otherwise."

Nakai belongs to a powerful 1.05 million-member political pressure group called the National Organization of Families of War Dead, whose electoral machine has great influence on the LDP.

Even so, Nakasone has apparently gained little. The visit eventually made him give up his hope of exceeding the ceiling on defense spending of 1 percent of gross national product (GNP) for fiscal 1986 due to a strong counteroffensive by opposition parties and even a political rollback within the LDP.

An advocate of "new nationalism," in which he puts stress on a greater role for Japan in world politics, Nakasone must soon face the difficult decision of whether such official visits should be continued. The issue likely to remain his Achilles' heel as long as he is prime minister of Japan.

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POLITICAL AND SOCIOLOGICAL

DIGNITARIES EXPECTED TO VISIT JAPAN

OW020607 Tokyo KYODO in English 0512 GMT 2 Jan 86

/Article by Shiro Yoneyama/

/Text/ Tokyo, 2 Jan KYODO--Prince Charles and Princess Diana of Britain, President Ronald Reagan of the United States and Soviet Foreign Minister Eduard Shevardnadze all have plans for at least one trip to the same oriental destination--Japan--this year.

Shevardnadze, a gregarious, 57-year-old Georgian, will be this year's first foreign leader to pay an official visit to Japan. His visit 15-19 January makrs the first by a Soviet foreign minister in 10 years and is symbolic of Japan's strong determination to improve one of the coldest diplomatic relations a postwar Tokyo government has had with a neighboring country.

Shevardnadze, who replaced the stony-faced Andrey Gromyko last July, will hold talks with Prime Minister Yasuhiro Nakasone and foreign minister Shintaro Abe during his 5-day visit, though the details are veiled in secrecy for security reasons.

But judging from this results of a series of preparatory sessions, Tokyo and Moscow will not be able to achieve any major results through the Soviet foreign minister's trip. The key stumbling block: a territorial dispute over four northern isles off Hokkaido.

Foreign Minister Abe has stressed that Japan's policy on the northern territories, under Soviet control since the closing days of World War II, remains unchanged: Japan wants them back.

Thus, the chances are that Shevardnadze will return to the cold with no big diplomatic souvenirs from Tokyo, other than probably a very limited cultural pact on which Japanese and Soviets have been negotiating for years.

Jacques Delors, president of the European Community Commission, (?is due) for a 5-day visit the day after the Soviet foreign minister departs Tokyo's Haneda Airport.

Delors' Japan trip will begin exactly 20 days after his Brussels-based Common Market boosted its membership to 12 with the entry of Spain and Portugal on 1 January.

He plans to renew the EC request to Japan to set a target for imports of manufactured and agricultural goods to correct the Common Market's annual 10 billion dollar trade deficit with Japan. Tokyo officially spurned the request during a ministerial meeting in November.

A Japanese trade negotiator revealed that Japan had contemplated making a counterproposal to the EC to set an export target. Tokyo dropped the plan at the last minute.

A group of U.S. senators, led by John Danforth, (R., Mo.), is also due 10 January to warn the Japanese they are prepared to pass "reciprocity" legislation unless Japan opens up its market and purchases competitive U.S. products to help bring about a significant reduction in America's chronic trade deficit with Japan.

Premier Bettino Craxi of Italy, who will make an official visit to Japan just before attending the seven-nation economic summit 4-6 May, will press the Japanese to buy more from his country.

Prime Minister Brian Mulroney of Canada, another summiteer, Chinese Foreign Minister Wu Xueqian and Premier Lee Kuan Yew of Singapore are among foreign dignitaries who will be due here this year with the same theme: to urge the Japanese Government to buy more from their countries.

Craxi, Mulroney and Delors will be joined by Reagan, President Francois Mitterrand of France, Prime Minister Margaret Thatcher of Britain and Chancellor Helmut Kohl of West Germany in the Tokyo summit hosted by Nakasone.

The summit team will deal with tough economic and trade issues confronting the global economy, including high interest rates in the United States, Japan's large trade and current account surpluses, Europe's structural rigidities, and a new trade round.

But this year's most photographed visit will undoubtedly be that of the photogenic Prince Charles and Princess Diana, whose whirlwind trip is slated for mid-May. The couple's visit--Diana's simple presence and her dazzling outfits--is sure to captivate the Japanese and influence the Japanese fashion world and youth culture.

Presidents Miguel de la Madrid of Mexico and Raul Alfonsin of Argentina, who were forced to cancel scheduled visits last fall due to killer earthquakes and domestic turmoil, respectively, may have their chance to meet Emperor Hirohito this year.

Other foreign leaders who may visit Japan before the year is out include Presidents Seyni Kountche of Niger, Mobutu Sese Seko of Zaire, Juvenal Habyarimana of Rwanda, Abdou Diouf of Senegal and Samora Moises Machel of Mozambique.

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POLITICAL AND SOCIOLOGICAL

TANAKA FACTION INFLUENCE ON PARTY, CABINET SHUFFLE EXAMINED

Tokyo SENTAKU in Japanese Oct 85 pp 50-52

[Text] On 1 September Ryutaro Hashimoto, deputy head of the Soseikai, who was visiting the lecture hall of KYODO news service, touched on personnel for party office and the cabinet reformation envisioned for the end of the year, and said the following concerning noteworthy individuals within the Tanaka faction:

"Nikaido, the Tanaka faction president (vice chairman of the party) talked with Mr Takeshita (finance minister), and the two reached agreement on unifying the list for a Tanaka faction cabinet. They are definitely not getting into a situation in which there is increasing tension, with the party divided internally over personnel between those in the Soseikai and those not in it." Hashimoto then revealed that he had confirmed this by telephone with both Nikaido and Takeshita.

Hashimoto's words may have been aimed at stressing that by drawing up a cabinet list with Nikaido, Takeshita, the head of the Soseikai, was in fact being informed in secret that his candidacy for party chairman was being met with a firm "no" from the Tanaka faction. In fact there were many who had expected that.

At the same time, Hashimoto's words put into fresh relief the deep differences of opinion within the Tanaka faction concerning personnel. Behind Hashimoto's having had to confirm the facts with Nikaido and Takeshita, one sees the difference in strength between Takeshita and the other leaders on the occasion of the present disposition of party personnel and cabinet reformation, and one would have to say that the strong desires of Nikaido to grasp the chairmanship are being hidden. Nikaido said the following regarding the situation:

"As the head of the Tanaka faction, I have the responsibility for making up the cabinet roster for the Tanaka faction. We will not give anyone reason to complain."

Then, with respect to the cabinet list he had drawn up, Nikaido said that he had considered everything, including the most difficult circumstances, receiving the "imprimatur" of Tanaka, and a significant atmosphere is emerging from the situation. The Tanaka faction is heading into a difficult situation as it looks to the first "personnel season" without a leader.

Tanaka's Ingenious "Duplicate List"

Even when Tanaka was in good health, the personnel of the Tanaka faction exhibited an extremely complex character. This was because, along with the complications of elections and the distribution of political funds, personnel problems were Tanaka's powerful weapon for seizing the swollen faction and operating it. Thus one could say that through the distribution of posts Tanaka was able to continue "Tanaka control" and reign as the kingmaker within the government and the Liberal Democratic Party.

For a long time in the Tanaka faction, Eiichi Nishimura, who worked in the party chairmanship (former party vice chairman), and present faction Chairman Nikaido made up the cabinet roster and presented demands to whomever was prime minister or party chairman in accordance with the general wishes of the faction.

However, Tanaka made the decision in consultation only with Masayoshi Ohira (former prime minister) and Yasuhiro Nakasone (prime minister) by hot line, circumventing this regular route. On the one hand, Tanaka's best techniques for winning people's allegiance included buying gratitude by including people in the cabinet with just a word; thus, even if resistance by Nishimiya and Nikaido were in vain, even for those who sneaked into the election, if Tanaka showed resentment because "Nakasone's people do not listen to what I say," the final arrangement removed Tanaka's reasons for resentment.

As for "Tanaka's dual lists," which only those who know can fully appreciate, the only people who have seen in detail Tanaka's ingenious means, even within the Tanaka faction, are probably Nikaido and Secretary General Tatsuo Ozawa (former minister of health and welfare). Let us look at recent examples of cases of this sort of behind-the-scenes cabinet selection.

(Case 1) The formation of the cabinet in 1977 under the Fukuda administration. Within the Tanaka faction, the inclusion of Shin Kanemaru in the cabinet (currently cabinet secretary) was expected. But instead, Ozawa was included in the cabinet and given the post of minister of health and welfare. The reason that Kanemaru, whom even Fukuda wanted, was replaced by Ozawa was solely because Kanemaru had brought up the transition from Tanaka to Takeshita within the faction and was seen in Tanaka's eyes as dangerous. The inclusion of Kanemaru in the cabinet was put off until the next round of cabinet formation.

(Case 2) In the Nakasone administration that was established in November 1982, Masaharu Gotoda (current director general of the prime minister's General Affairs Office), who was a 3d-year Diet member at the time, was shunted out of the post of chief cabinet secretary. This arose out of a strong desire of Nakasone, but it was carried out as a secret play between Nakasone and Tanaka. While this was known at the time by Nikaido who had been kept on as LDP chief secretary, Tanaka had no choice but to lie to faction members who showed unrest over the multiple use of Gotoda, saying: "I had been put into a blind seat and didn't know a thing about it."

(Case 3) In the cabinet arrangement following the general election of December 1983, Tanaka for the first time arranged for the inclusion in the cabinet of party mainstay Tsunezo Watanabe as minister of health and welfare, together with Toshikazu Okuda who had similarly been appointed as minister of posts and telecommunications. Although Ichiro Ozawa and Tsutomu Haneda, who had worked hard at party work and as head of the Political Coordination Bureau, were described as "more suitable" than Watanabe in a memo to Nikaido, Tanaka's men were perforce passed over and do not yet have any cabinet experience. Behind Watanabe's appointment to the post of minister of health lies the granting of a reward for Watanabe's having bought an office in the first general election for Tanaka's son-in-law, Naski Tanaka. Ozawa and Haneda reacted violently to such activities by Tanaka, and one might say that the fact that this became one of the ultimate reasons why they, who were known as Tanaka's "bodyguards," ran to the flag of the Soseikai, was a case of "water slipping through skilled hands."

(Case 4) In the party office personnel issues surrounding the "reelection of Nakasone" in November 1984, ignoring Kanemaru (then chairman of the LDP Executive Council) who had had a successful record in intraparty dealings, Tanaka and Tatsuo Ozawa concocted a plan to put Ozawa in as chief cabinet secretary and boost Kanemaru to the post of speaker of the House of Representatives after the succeeding general election. Whether it was the earlier conception of Watanabe as minister of health or Ozawa as secretary general, Tanaka's strong party personnel work incited chaos within the party faction with reason, and this was the work that made Tanaka proud.

Well then, in the next party office personnel disposition and cabinet formation, how will the Tanaka faction handle matters? In other words, who will exercise the power of personnel selection?

Essentially a Struggle for Three Posts

There are eight people from the Tanaka faction who have been included in the party and cabinet of the Nakasone government: Deputy Premier Nikaido, Chief Cabinet Secretary Kanemaru, Minister of Finance Takeshita, General Affairs Director Gotoda, Director of the Science and Technology Agency Takeuchi, Minister of Agriculture, Forestry and Fisheries (Moriyoshi) Sato, Minister of Posts and Telecommunications (Megumu) Sato, and National Territories Director Komodo of the House of Councillors.

Among these, it is certain that Nikaido will remain in the post of party vice chairman, since this post falls to the personnel affairs of the party congress (the party side is superior). And the line is certain for Chief Cabinet Secretary Kanemaru to retain his post, since he is necessary for the Nakasone system and since he is the guardian of the new leaders Takeshita and Foreign Minister Abe Shintaro.

Zenko Suzuki (former prime minister), who is concerned with the political fortunes of Kieichi Miyazawa (chairman of the LDP Executive Council), is aiming at ousting Kanemaru and is trying to promote the elevation of Miyazawa to chief cabinet secretary, but Miyazawa has no popularity and no clout. On the

other hand, with Tanaka in decline, the situation in the Tanaka faction is that there is no chance of setting up (Tatsuo) Ozawa in place of Kanemaru, and there is no force within the LDP that can oppose Kanemaru in skill and power. Nakasone is in a political situation in which he cannot move Kanemaru, in light of the bout with the "Abe/Takeshita alliance."

In these circumstances, the personnel objective for which the Tanaka faction can strive is limited to the cabinet formation. But even this will be extremely difficult.

First, the retention of Takeshita in the cabinet (in that case, his remaining as the finance minister would be likely), together with Abe of the Fukuda faction, is not only Nakasone's political desire; there is also the consideration of problems such as economic friction and the summit (summit conference of the seven leading industrialized nations), and thus this is virtually certain.

Second, there is persuasive evidence that Director General Gotoda will retain his post or move sideways in the cabinet. That is, Gotoda has taken on the role of "protector of the views" of the Nakasone cabinet, and his hopes are great for administrative reforms that will be carried out with courage and skill in such areas as the decision to reform the national railroads. Nakasone's trust in him is said to be very great, and it is said that even Kanemaru has let slip to those around him that "He's very skilled, and thus Nakasone wants to keep him."

Since a cabinet from the House of Councillors would wind up separating itself from the faction and would take the form of the LDP making recommendations, if Takeshita and Gotoda are retained, the retention of three more posts would be essential in order to maintain the strength of the Tanaka faction in the cabinet (in terms of number of posts).

To summarize the talk of the Tanaka faction leadership, then cabinet candidacies within the faction will go to Tatsuo Ozawa, Mototoshi Yamashita, Ryutaro Hashimoto, and Keizo Obuchi among the older members, and to Ichiro Ozawa, Tsutomu Haneda, Osamu Takashima, Tamisuke Watanuki, Toshiyuki Inamura and other younger members. For three posts one would have to calculate that a total of at least nine candidates, both old and young, would be clamoring, and one can foresee that coordination would be rough going.

As the new causes of a year without precedent, one would have to include the antagonisms of the non-Soseikai side coming along with the start of the Soseikai. If one supposes that the Soseikai will not be dissolved until the time of the formation of the cabinet, even if Takeshita and Nikaido were to hold consultations, the problems are such that no simple solutions would easily emerge.

If one were to venture a bold guess, it might be that those included in the cabinet for all three posts from the Tanaka faction will be newcomers. Under the present conditions, in which the aspect is strongly in favor of Takeshita and Gotoda staying on, it is natural that with the conflict between the Soseikai members, it appears that only new men such as Ichiro Ozawa will be listed on the cabinet roster.

Even so, the situation is complex. Ozawa, Haneda and Watanuki are Soseikai members, while Takashima and Inamura are not. Among these, there would be strong arguments of sympathy for Ozawa and Haneda due to factors mentioned earlier, and the Soseikai is supporting the inclusion of both in the cabinet at the same time.

Against this, on the non-Soseikai side there is support for the inclusion of the calm-spirited Takashima. However, to the extent that Ozawa backs Inamura's candidacy, they would form a coalition with those outside any faction, and Tanaka's illness is all the more painful now especially.

It is said that Nakasone, who is both prime minister and party president, has told Kanemaru and the Tanaka faction leadership that "I want fair dealing between the Soseikai and non-Soseikai" (since Kanemaru is faction chairman, the faction would initially be split). But the situation regarding the selection of the cabinet, including the retention of Kanemaru as faction chairman, leaves no doubt that it will move to the benefit of the Soseikai.

The Greatest Danger Vis-a-Vis Military Group Reconciliation

Thus, outside of Nikaido and Takeshita, the one who is closing up fast is Kanemaru. Since Kanemaru is the cabinet secretary, he is not only in the so-called "cabinet council," but he is also in a position to be consulted, after Nakasone, regarding all personnel issues of the party and the cabinet.

Kanemaru himself has said: "it would be bad to have a confrontation between the Soseikai and the non-Soseikai. In either case this issue is critical, and we will probably work it out in consultation with Nikaido and Takeshita." But he reflected his real feelings to friendly Diet members when he said: "I do not like it, but I will have to hold discussions."

Is it likely that Nikaido, Takeshita and Kanemaru can all enter into consultation and achieve peaceful personnel decisions without tipping the Tanaka faction in any direction? There is no doubt that fear within the faction is raising a specter in people's minds.

According to an influential leader extremely close to Tanaka, "there is a scenario whereby Nikaido shows the cabinet roster to Tanaka (while he is ill) and receives his approval." Tanaka, who is undergoing rehabilitation, is gradually regaining his judgment, but his speech impediment is severe, and even if he understands what is said to him, he cannot express his own wishes fully.

Even if Nikaido requests the agreement of Tanaka in this condition regarding personnel, there will be talk that there is something shady. It may be all very well for Takeshita and Kanemaru to talk of approval, but if it appears that Kanemaru, with his tremendous conceit, will be running alone too much to recognize this ultimate requirement, it will cause great upheaval within the party.

The currents of pacification within the Tanaka faction are finally beginning to flow after the faction was severely shaken, first by the "Nikaido support

drama" of last year, then by the flag raising of the Soseikai, then by Tanaka's illness; and the fortunes of healing the relations between the Soseikai and the non-Soseikai are growing stronger, including support for Takeshita as party chairman.

Party function personnel decisions and the formation of the cabinet will be the "proof" of whether this healing is real or not, and that is why concern is growing within the party over the decision between Nikaido and Takeshita or Kanemaru. If Tanaka were to intervene while he is ill, it would turn out that the "duplicate list" and the "hidden route" would be carrying out secret maneuvers, and there would be no guarantee that the threat of another factional split could be avoided.

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POLITICAL AND SOCIOLOGICAL

IMAGE OF BUREAUCRACY IN AGE OF INTERNATIONALISM DISCUSSED

Tokyo JIHYO in Japanese Summer 1985 pp 60-63

[Interview with Isao Sato, Tokai University, Pres. of Law Research Institute, by Sugita; date and place not specified]

[Text] [Question] Although it is widely known both within Japan and abroad that the Japanese bureaucracy has played a major role in our economic development, as we enter the age of internationalism it appears that a new posture toward internationalism is required.

Sato: You mention a posture toward internationalism; however, internationalism did not originate during the past few years alone. When people talk about internationalism now they are referring specifically to the surfacing of trade friction problems, for example, or the impossibility of separating domestic policy from foreign policy in deliberations. In these matters, however, we see the age of internationalism come into focus. Internationalism is certainly not something which has just started. It had its origins at the close of the war, when Japan's defeat gave rise to the "founding of a second nation."

Whatever the short-term requirements for the bureaucracy, meeting those requirements will not result in an immediate resolution of the trade friction problem.

Recently, the particular problem has been that the United States urgently wants Japan to take measures to resolve this trade friction, although Japan is responding to this in various ways, inevitably our trading partner sees these responses as incomplete. Since our response is piecemeal, it is perceived as such by the United States.

A piecemeal response gives the United States the impression that Japan is merely trying to patch up things as they come up. Although I believe that the United States is making some unreasonable demands, and I would like them to exercise more good sense in some areas, the Japanese response is still incomplete, and conveys an image of either being an escape or a deception, creating distrust. When the final curtain comes down, then, it seems that it happened all at once.

[Question] Why do our trading partners believe that Japan's responses have been slow and ineffective?

Sato: Although I think there are a number of reasons for the incompleteness of our response, they say that our government offices and organizations hinder such a response. The spheres of influence among Japan's ministries and agencies are one reason for this. (A word by the prime minister or other authority won't have any effect in correcting such a jurisdictional dispute.

This is something that must be considered at the long-term planning stage. It is something which is established within the planning process; it is coordination by means of a plan.

We were slowly pushed into a corner, and when the crisis came, the result was that there was no planning or coordination, and we were unable to bring the coordinating function into play. When that happens, decisive action is impossible.

[Question] What you are saying, then, is that this problem has very deep roots. This is not a problem of the qualifications of individual bureaucrats.

Sato: That is right. In other words, a system for formulating plans must be firmly and clearly established within the administrative structure. Although it is abstract, the much talked-about comprehensive coordinating function of the administration is important.

In Japan when the subject of this comprehensive coordinating function comes up, people immediately start discussing the leadership of the Prime Minister, or the solution to the sectionalism of the government offices.

However, it is really nothing like that. I believe that in essence, the administrative structure itself must be operated daily in such a way that this comprehensive coordinating function can be brought into full play.

More important than the qualifications of individual bureaucrats is this mechanism for arranging the structure of the government itself. This is not an era when these problems will be solved by efforts on the part of individual bureaucrats, no matter how diligent.

[Question] Today, then, the bureaucracy can not be considered apart from its organizational problems, and organization and function have important significance.

A Close Connection to the Personnel Administration of Government Workers

Sato: We must focus our attention on the qualifications and skills of the bureaucrats in a long-term perspective. This involves the problems of personnel administration and the government employees system.

For example, the subjects which are now included in the senior Civil Service Exam are decided preponderantly in accordance with university subjects. I

have served for a long time as a member of the testing committee of the National Personnel Authority. The engineering field is an exception, but for general administrative jobs the main subjects included in the exam are constitutional law, civil law, public finance, and economics. Those who pass this test are considered superior candidates.

These subjects are certainly necessary for basic learning. However, is this learning likely to supply the international sensitivity or the skills needed by the bureaucrat in an age of internationalism, as our society is demanding? The subjects which would enable bureaucrats to adapt to this age of internationalism do not appear on the examination. Something must be done about this aspect of the examination system.

In the Diplomatic Service Examination, compared to general administration, foreign languages are regarded as more important than anything else in terms of the age of internationalism. However, it is not impossible that the foreign language skill can be acquired during the time he actually serves in the office. Once a certain level of foreign language skill is reached there is not much gap in the ability any more. Therefore the emphasis on a foreign language in the Diplomatic Service Examination is lessening, year by year, however, it will never be eliminated. Of course, constitutional law, civil law, administrative law and international law are also included as subjects. This is fine, but if we are going to demand internationalism, an ability to look at things from an international perspective will be needed on the job as well. And that applies to constitutional law, economics, culture, society and ideology, too.

In terms of learning, cultural anthropology and comparative cultural theories are important, and in the field of international law, leading universities are teaching a theory of international relations as well as international law and international politics. This is not reflected, however, in the senior Civil Service Exam of the Foreign Ministry. For some time the Foreign Ministry is said to have been studying the exam system, including the subject matter, but I do not believe there has been much progress. However, it is necessary to build up the beginning like this.

We do however realize that even if every necessary subject is included in the exam, that does not mean the diplomats and public servants automatically become capable in the international scene. It is still necessary for them to try even harder after they become diplomats or public servants.

By that I mean that the structure itself must be organized so as to be flexible in incorporating this internationalism and such things as comparative cultures.

[Question] In addition to special administrative knowledge and foreign language acquisition, a wider cultural educaiton is necessary. Its like giving some flexibility to an old concept.

Sato: It is not an easy task, however, in the long run it should work. We talk in general about the bureaucracy this, the bureaucracy that, but there

are lots of things that are not clear about the bureaucracy. Unless we know for sure whether we want to deal with the problems of qualifications of individual bureaucrats, or bureaucracy as an organization, our talks become chaotic.

[Question] One criticism that is often raised is that the Japanese bureaucrat should be more independent; he is too much of a yes-man to the

Sato: You're probably talking about the so-called "Politician dominating the bureaucrat" saying, or its reverse, "the Bureaucrat dominating the politician." I do not believe this, as a rule. There may be instances where the bureaucrat should be tougher, and should present a stronger front to the politician. When the politician wants to do the impossible or the irrational, he must be corrected.

However, on the other hand, when the bureaucrat is thinking only of his own ministry and its sphere of authority, the politician must be tough on him. In other words, whether it is bureaucrat dominated or not, it all depends on where the problem exists. It probably should be handled on a case by case basis.

However, Japan does have a system of popularly supported Diet members administration, and it is the job of the public servant to assist the administration.

[Question] Can we say that it is appropriate that the politicians basically control the bureaucrats, and that is where the bureaucrats belong in a democratic society?

Sato: In a sense, the politicians/the parties control the bureaucratic, and they must be capable of bringing the best of the bureaucrat's strength. The reason why some bureaucrats run for election could be because they cannot tolerate what the politicians are doing.

[Question] They must feel that the politicians are not quite fulfilling the needs or lacking of something.

Sato: That is probably true. That's one reason for the bureaucrats to run for election. On the other hand, the politician may make moves to draw the bureaucrat toward the political world or toward his party. The bureaucrat's relationship with the political world is probably one or the other.

In any case, if he is a capable person he can enter the world of politics, or, after retirement, he can be reemployed and become active in the world of business. This would be desirable from the viewpoint of economics of skill.

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POLITICAL AND SOCIOLOGICAL

POLITICAL ECONOMY OF RETALIATION AGAINST JAPAN

Tokyo SEKAI in Japanese Jul 85 pp 132-144

[Article by Yoichi Funabashi, ASAHI SHIMBUN Correspondent in Washington, D.C.]

[Text] The U.S. Senate unanimously adopted a resolution instructing the President to take retaliatory measures through import restrictions if Japan's opening of its markets does not show results. The most powerful committee in the Senate, the Finance Committee, passed a bill obligating the President to such measures. These so-called anti-Japanese retaliatory resolutions and bills have pushed Japan-U.S. trade fiction--which has become nearly chronic in the 1980's--to a new stage. Regardless of whether the bill actually passes in Congress, the Japan-U.S. economic relationship will certainly be continually subject to the pressures of "retaliation" from the United States from now on.

Such an unprecedented action by Congress against an allied nation took place in the midst of an apparently excellent "Ron-Yasu" U.S.-Japan relationship, and was promoted by the supposedly "more free-trade" Republican Party in the Senate, which "should know better." Something went wrong with American society's interests and perception of its interests in the economic relationship with Japan; perceptions closed in on "retaliation," and exploded. It is vital to analyze the course of these events in order to predict the future of the U.S.-Japan economic relationship.

I. What Happened?

New Congress, New Committee Chairman

In January, there was some talk that Congress should give a strong signal of its intent to both Japan and the Reagan administration. Senator Packwood (Republican from Oregon) had just become the chairman of the Senate Finance Committee in the new Congress. Four or five informal meetings, led by Senator Packwood, were held, first among the Republican members of the Finance Committee, and then with Democratic members of Congress. Initially, under the new Finance Committee chairman, the committee's agenda was to be taken up by the budget for the coming fiscal year and the tax system. In particular, this year the drafting of the FY86 budget (for October 1985 through September 1986) would run into the inevitable difficulties with respect to reducing the federal budget deficit, and deliberations had to be held on major tax reform plan launched by President Reagan, aimed at simplification and fairness. Thus

it appeared the committee would not get to trade issues. The Republican Party leadership was probably then all the more surprised by Senator Packwood's decision to make the trade deficit--specifically the trade deficit with Japan--his first major agenda item.

At the Japan-U.S. summit talks at the beginning of the year, Prime Minister Nakasone promised to open Japan's markets in four sectors, including telecommunications equipment and forest products; negotiations on these sectors began. In addition, the date for the privatization of Nippon Telegraph and Telephone (NTT) and the time limit for the voluntary restraints on Japanese car exports to the United States both fell on 1 April. All these events were affected by the pressure to open targeted markets by that date.

In 1968, Senator Packwood defeated Senator Warren Moss, a 4-term incumbent; this is Senator Packwood's third term. At the beginning of this year, Senator Packwood--who until then had been chairman of the Commerce and Science Committee-succeeded Senator Dole as chairman of the Finance Committee when Dole became Senate majority leader. An advocate of zero production growth, and a member of the "pro-choice" faction of the Republican Party on the issue of abortion, he is a liberal who is strongly opposed by national women's groups. On social issues, of course, he has often voted against the policies of the Reagan administration, but on economic issues he has appeared to be a conservative free-trader. At the time of his reelection in 1980, women's groups mounted a successful direct mail campaign, and while he defeated his opponent, it was certainly not a landslide victory; he is not a politician who is especially skillful in elections. Moreover, in the face of his reelection in 1986, his native state of Oregon is in the midst of a lumber industry recession. Republicans from lumber states, including Senator Packwood, are the ones who pushed hard to have wood products included as one of the four sectors. Trade is certainly no less important to Senator Packwood than the budget and the tax system.

Among those besides Senator Packwood who played a central role in the series of meetings are Senators Danforth (Republican, Missouri), chairman of the Trade Subcommittee of the Senate Finance Committee; Bentsen (Democrat, Texas), who was a Democratic vice presidential candidate in last year's presidential election; and Baucus (Democrat, Montana), who though newly elected, has been very enthusiastic about trade issues.

The Danforth Factor

Of all of these, Senator Danforth became the driving force. In the previous session, Senator Danforth had promoted a bill on reciprocity in telecommunications equipment, tried to have section 301 of the 1974 Trade Act revised in order to strengthen the President's authority to take retaliatory measures against countries that violate international trade rules, and was able to have this revision included in the 1984 Trade and Tariff Bill last autumn. Under the perception that the current GATT (General Agreement on Tariffs and Trade) alone cannot respond adequately to the problems encountered by U.S. export industries, this revision of section 301 enables the President to take immediate retaliatory measures against unfair trade acts by foreign countries, in fields including investment and services, which are not included in GATT.

After receiving confirmation from U.S. Trade Representatives Brock on 19 February that the U.S. Government had quietly decided at a cabinet-level meeting to have restraints removed on Japanese automobile exports to the United States, Senator Danforth cosponsored with Senator Boren (Democrat, Oklahoma) a resolution stating that "restraints on Japanese automobile exports to the United States should be continued until the trade deficit with Japan is reduced and Japan's specific market opening measures show results." The resolution was intended both to use continuation of export restraints as leverage to open Japanese markets and for the purpose of continuing the restraints themselves.

Actually, starting about 1 month before this, the lobbying of Congress by Chrysler, Ford, and the United Auto Workers (UAW) to continue the restraints had increased. Chrysler in particular, which employs 7,800 persons in a factory in St. Louis (Senator Danforth's home town), intensified its pressure on that senator. Chrysler prepared its own draft resolution, brought it to Senator Danforth's staff, and worked to gather joint sponsor's for the senator's draft resolution. There were a total of 38 cosponsors of the bill, including Senator Danforth, and it appears that most of these were cultivated as a result of Chrysler's efforts.

Now, from the beginning, Senator Packwood and the staff of the Senate Finance Committee had believed strongly taht removal of the auto restraints would be more powerful in persuading Japan to open its markets. At about this time, both Senator Packwood and members of the staff of Senator Evans (Republican, Washington), who also hailed from a lumber state, stated that "Danforth has made a strategic error. Reagan's removal of the restraints will be more powerful." These senators thus made public their opposition to the Danforth bill on those grounds. Moreover, because within Congress "there was almost no sympathy for the automobile companies, which had earned enormous profits, and an overwhelming feeling that a line must be drawn to their mounting protectionism," (according to a member of the Senate Finance Committee staff), everyone awaited the outcome with the feeling that ultimately, the resolution would not come to a vote during this session of Congress.

Public Hearings on 8 March

However, on 28 February, it was made public that the U.S.'s trade deficit with Japan for January was about $10.3 billion, the second highest ever; and on 1 March, President Reagan decided formally "not to ask Japan to extend [the restraints] again." As a result, dissatisfaction toward Japan increased drastically within Congress. This dissatisfaction erupted at the hearings on Japan-U.S. trade issues, held by the International Trade Subcommittee of the Senate Finance Committee on 8 March.

During those hearings, most of the senators present issued sharp criticisms of Japan, including Bentsen ("we are becoming victims of the illusion that Japan is accumulating surpluses as a result of greater economic strength") and Heinz ("if Japan cannot open its markets for political reasons, we, too, have no choice but to take political action"). Even Senator Chafee (Republican, Rhode Island), who had previously been a free-trader, added his voice to

the chorus of criticism against Japan, stating that "the Japanese trade problem has now entered a completely new stage. If a bill for severe retaliation against Japan were submitted now, it would certainly pass within 2 weeks."

At this hearing, Senator Danforth issued a five point proposal: (1) the Japanese trade problem is not only a problem for the United States, but rather it is a "global problem" shared by all countries other than Japan; (2) the deficit with Japan exists totally unrelated to the high dollar, low yen; (3) in view of the history of trade negotiations with Japan over the past 4 years, further negotiations would be a waste of time; (4) the U.S. Government's policy of opening U.S. markets to Japan without the equivalent from Japan is wrong; (5) now is the time for action, not consultation. On the basis of the perception that this is a "global problem," he proposed that "the United States, Western Europe, and the developing countries get together to discuss what they should do jointly about Japan." In response to this, Senator Matsunaga (Democrat, Hawaii), who is of Japanese descent, said in protest that "it appears that we have not learned our lesson from the time of World War II (when Japan was isolated and driven into a corner, resulting in war)." Senator Danforth said "This is my lesson!" and pointed to a graph before the panel, showing the annual doubling of the trade deficit with Japan since 1979.

Immediately after this, the staffs of both Senators Danforth and Packwood, started working in earnest to draft a new resolution (a second draft resolution) with the staff of the Finance Committee. Since the President had already decided to remove the auto restraints, continuation of the restraints could not be used as leverage. Therefore, the draft resolution included implementation of retaliatory measures, demanding that strong countervailing measures be taken in order to prevent an increase in the U.S. deficit with Japan as a result of the removal of the restraints. The draft resolution was submitted primarily by members of the Finance Committee, including Senators Danforth, Grassley (Republic, Iowa), and Boren, and it was passed unanimously by the Finance Committee on 27 March and by the full session of the Senate on 28 March. A member of Danforth's staff who was instrumental in this affair stated afterwards, "I was not sure until the vote in the full session was complete whether the bill would pass. When I learned that it passed unanimously, 92 to 0 in the Senate, I became almost fearful of the excessive strength of the criticism against Japan."

Ambush

Although the scenario of the "retaliation against Japan" followed Senator Danforth's calculations, it ultimately was met by an ambush, which would not allow matters to progress from a resolution that did not go beyond an expression of Congress's intent and was not legally binding, to a bill that had legal enforcement power.

One member of this ambush was none other than Senate Finance Committee Chairman Packwood. After the draft resolution passed unanimously in the Senate Finance Committee on 27 March, Senator Packwood displayed a hard-line stance toward Japan, saying such things as, "We do not want to adopt a policy of an eye for an eye, but this may be the only kind of talk that Japan can understand." However, at a staff session held immediately before deliberation of

the bill to examine the draft bill prepared by Danforth's staff, Senator Danforth's staff stated, "The resolution was fine. But Portland (capital of Oregon) has very deep economic relations with Japan, and Japan imports a lot of products from Oregon. Senator Packwood is opposed to measures that would actually limit imports from Japan."

Another one was Senator Chafee. Immediately after the explosion of criticism against Japan from the members of Congress at the 8 March hearing, he started to prepare his own draft of a bill on retaliation against Japan.

From the start, Senator Chafee was diametrically opposed to Senator Danforth's call for continuing restraints on Japanese automobile exports to the United States, strongly advocating removal of the restraints. On 7 February, he sent a letter to President Reagan, jointly signed by five other Republican Senators--Durenburger (Minnesota), Symms (Idaho), Hawkins (Florida), Wilson (California), and McClure (Idaho)--requesting that the restraints be repealed.

This movement led by Senator Chafee and the movement to continue the restraints, brought into focus by Senator Danforth's first draft resolution, bespoke of the clash within the Senate at that time between the advocates of removing and those of continuing the restraints on exports of Japanese automobiles to the United States Senators Chafee and Danforth met several times after the hearings of 8 March, and during these sessions Senator Chafee expressed his support for Senator Danforth's second draft resolution. However, Senator Chafee opposed the Danforth bill from the start.

First of all, he differed with the Danforth bill's perception that the U.S. trade deficit with Japan was a problem in itself; he believed, "The problem is not the deficit. Rather, the problem is that Japan has closed its markets to U.S. products that are competitive as exports." Second, he believed that the scope of restricted products in the Danforth bill, i.e., automobiles, telecommunications equipment, and electronics, was too broad; he believed that the scope of targeted products should be narrowed to telecommunications equipment, which is clearly competitive. In the end, this difference of view ended up as an expression of the view that automobiles should not be included. Third, while the Danforth bill left retaliatory measures up to the President, Chafee thought that Congress should have a direct hand in the matter. Under the Danforth bill, the President theoretically could refuse to retaliate. Senator Chafee thought it was necessary to close up this loophole; that if the U.S. were to retaliate at all it should be thorough about it. He therefore thought that a bill should be drafted that would enable Congress to implement retaliatory measures instead of leaving them to the President.

Faced with this two-person ambush, Senator Danforth gave up on Senator Chafee, and focused on persuading Senator Packwood. As a result of discussions at a staff session, they reached agreement that "unlike the situation up to now, some kind of powerful measure is necessary." Senator Danforth convinced Senator Packwood of the necessity of putting this in bill form as "the collective view of the Finance Committee," and the chairman of the Finance Committee finally consented to working along those lines.

Mark Up (Deliberations on the Bill)

At the Finance Committee's deliberations on the bill on 2 April (16 of 20 committee members attended), Senator Chafee moved that: "The question is whether Japan will open its markets to American goods that are very competitive internationally. Therefore, I propose a bill to ban American imports of Japanese telecommunications equipment beginning in June, unless Japan opens its markets completely to telecommunications eqiupment."

However, substitution of this proposal for the Danforth bill was defeated, 11 to 5, and a subsequent amendment proposal by Senator Heinz to append the Chafee bill to the Danforth bill was also defeated, 8 to 8. Those who supported the substitute bill were Chafee, Roth (Republican, Delaware), Wallop (Republican, Wyoming), Moynihan (Democrat, New York), and Symms (Republican, Idaho). Those who supported the amendment were Chafee, Roth, Heinz (Republican, Pennsylvania), Symms, Bentsen, Moynihan, Boren, and Pryor (Democrat, Arkansas).

Finally, when the Danforth bill was brought to a vote, it passed, 12 to 4. Those opposed were Republicans Chafee and Wallop, and Democrats Moynihan and Matsunaga.

Chapter 2 What Stirred Congress Up?

What stirred Congress--specifically the Senate--up so much? What were the incentives, calculations, thoughts, feelings, and ideas that stirred the senators to action? Moreover, what kind of circumstances made such action possible? If we concentrate on seven of the various factors that led to the birth in this form of the anti-Japanese retaliation resolution/bill--which, according to a member of Senator Chafee's staff, could be seen as the product of "each and every concern and fear"--we can analyze the situation along the following lines.

(1) Constituency

First, since they are members of Congress, they certainly are under pressure from their constituencies. It would be untrue to say that Senator Danforth, who is elected by Missouri--which contains the largest Chrysler factory and is the second largest automobile state in the U.S. after Michigan--does not think at all about Chrysler's interests. Senator Danforth had been a central force in continuing Congressional pressure on the administration for restraints on Japanese car exports to the U.S. since 1981. We have already seen that this time, too, Chrysler was actively involved in promoting and gathering sponsors for the first draft resolution. Senator Grassley from Iowa has to deal with the cries from the "corn belt," which is in the midst of an agricultural recession, and Senator Heinz has to deal with the thirst for protectionism in Pennsylvania, at the heart of the American steel industry which has barely been able to survive through export restraints from various countries. Senators Packwood and Baucus have the forest products industry, which is suffering from inroads made by Canadian materials and a slump in exports. It goes without saying that the pitiful situation of the forest products industry

in Oregon, where 25,000 people are unemployed, is of major concern to Senator Packwood.

A member of Senator Chafee's staff said, "Senator Danforth submitted his bill with the auto industry of his home state in mind, but our senator did not act out of consideration for his home constituency;" however, Senator Chafee's electorate state of Rhode Island is adjacent to Massachusetts and Connecticut. There is an area in the suburbs of Boston around the region of Route 128 that has suddenly developed into a high tech region in recent years. Many residents of Rhode Island commute to that area, and Rhode Island has been working jointly with the area to promote high tech development. Senator Chafee was so persistent about telecommunications equipment, the core of high technology, as a result of these movements to develop high technology in New England.

(2) Leverage to Open Japan's Markets

However, one cannot explain the actions of the senators solely by the interests of the constituencies. Even Senator Baucus, who said that "the individual petitions and pressure from our constituencies against Japan were not sufficient to make us agree," enthusiastically supported retaliation. Senator Roth said, "In brief, I voted in favor of the bill in order to use it as leverage to open the Japanese markets." Many senators acted out of such motivation. In particular, the market opening negotiations on telecommunications equipment, which was at the center of the market-oriented sector-specific (MOSS) negotiations that began in January in order to open Japan's markets, did not reach a break-through due to strong opposition from the Ministry of Posts and Telecommunications, even as 1 April--the "deadline for restrictions"--approached. This confirmed the senator's belief that "stronger leverage is needed to open the market." One cannot deny that the announcement by Ministry of International Trade and Industry at the end of March that the number of Japanese automobile exports to the United States starting 1 April would be "restricted to a 25 percent increase over last year's exports"--without mentioning the negotiations on telecommunications equipment--"added fuel to the argument for retaliation and strengthened the opposition with Congress, which felt they [the Japanese] were simply trying to lead the U.S. administration by the nose and get away with everything," (Senator Matsunaga).

However, even if retaliation were to be used as leverage, some felt that "instead of using this against Japan, we should be able to use it against the administration, which is not doing anything," (Senator Danforth). There was dissatisfaction with the Reagan administration--not just on the part of Senator Danforth, but also fairly widespread on the part of Republican Senators--because despite repeated calls for retaliation measures such as import restrictions, authorized the administration to open the markets under section 301 of the 1974 Trade Act, the administration took absolutely no action. Senator Chafee's bill clearly demonstrated these sentiments; as stated previously, this bill did not cosign retaliatory measures to the President, but rather provided that Congress would implement them. Senator Chafee had long thought highly of the abilities of U.S. Trade Representative (USTR) Brock, but on 20 March Brock was chosen, despite his intentions, to succeed Labor Secretary Donovan, who resigned hurriedly under suspicion of

bribery; according to a member of Chafee's staff, "this was a major cause of Senator Chafee's doubts about whether the administration truly meant to deal with trade policy."

(3) Instigation or Conspiracy

Nevertheless, one cannot dispel the suspicion that the administration--in order to move the negotiations on opening the Japanese markets to its advantage--instigated Congress toward these resolutions and bills behind the scenes, or even if it did not go that far, that the administration secretly conspired with Congress.

At one point in March, USTR Brock told Senator Chafee, as explained by a member of Chafee's staff, "I have repeatedly advised the President to invoke retaliatory measures under section 301 of the 1974 Trade Act, but he has evaded this each time." Depending on how one wants to interpret it, such a statement could be taken as instigation, as saying "since there is no prospect for action by the administration at this time, I would like Congress to take action."

At the same time, "in order to apply pressure on Japan, there was absolutely no talk of asking for anything; they tried to avoid contact with Japan as much as possible," (according to a member of Senator Danforth's staff). Statements by staff members of influential members of Congress were in surprising agreement on this point. The administration apparently pretended indifference, coming to the conclusion that Congress would probably take some kind of action even without the administration stooping to incurring another debt to Congress. Thus, when Under Secretary of Commerce Olmer testified before Congress that "Congressional pressure on Japan will be advantageous to negotiations with Japan," the administration seems to have both expressed gratitude to Congress and instigated Congress.

What is certain is that up until passage of the bill in the Senate Finance Committee on 2 April, the U.S. administration made absolutely no effort to impede the retaliation movement. All interviewed Congressmen and Congressional staff members confirmed this point; however, the figures for the vote on the second draft resolution--92 to 0--bespeaks the fact that the Reagan administration did not interfere at all. According to a Finance Committee staff member, "If the administration truly wants to persuade Congress to abandon something, the President or USTR Brock sends telegrams to senators. This did not occur at all this time. On the day before deliberation of the bill, Greengritch (an advisor) merely mumbled to Senator Packwood's staff, 'the administration is opposed to the bill.'" I think that the phrase "passively encouraging," used by a member of Senator Chafee's staff to describe the administration's actions at that time, is extremely accurate.

(4) "Scapegoat" for Election Purposes

Nevertheless, why did the Senate--traditionally a stronger advocate of free trade than the House--take the lead? Moreover, why did the Republican Party do so?

In the 1986 mid-term elections, the Senate Republicans have many more senators up for reelection than the Democrats--22 as opposed to 12. Even among the 20 members (11 Republicans, 9 Democrats) of the Finance Committee, while Senator Long, who has already announced his retirement next year, is the only Democrat up for reelection, 3 Republicans--Majority Leader Dole, Committee Chairman Packwood, and Grassley--face reelection. The fact that senate leadership such as Senators Dole and Packwood face reelection increases further the keen interest in the 1986 elections. If the high dollar rate and the agricultural recession worsen to the point of damaging the future of the economy, the small margin of four Senate seats currently determining the majority could change hands. This is why the Republicans must work on counter-measures for the federal deficit and the trade deficit. Thus it is not strange that it was foreseen that leaving aside for now difficult issues such as dealing with the high dollar, it would be politically advantageous to attack Japan--the prime mover in the U.S. trade deficit with Japan, which accounts for one third of the trade deficit. The idea was that out of party partisanship, the Republican Party would hide the Republican Reagan administration's "mismanagement" of the trade issue, and would sacrifice Japan.

However, if they were to stir up a rash of criticism against Japan which has already been fierce to date, the trade issue could close up even further, and could get out of hand to the point of becoming an issue of next year's elections. If the aim was to divert attention from "mismanagement" by making Japan a scapegoat, this would probably be too short-sighted. Some may have had such motivation, but it is hard to believe that the core of the Republican Party, including Senators Packwood and Danforth, acted for the sake of such immediate "diversion tactics." Senator Danforth also joined forces with Democratic Bentsen from the start, and the two parties coordinated closely on the staff level.

Moreover, the Democratic Party nevertheless aimed to a rather great extent to use this to attack the "mismanagement" of the Republican administration, and to make this a major issue in next year's elections. In the Senate, the trade policy group (composed of 12 Democratic senators) was initiated at the beginning of this year, with Senators Bentsen and Baucus at the forefront, to set about strengthening the party's handling of the trade deficit issue. And the Democratic Senators are not hiding the fact that this is aimed at making trade a main criticism of the administration in anticipation of next year's elections. On 25 April, the policy group published a report that put together proposals on what the U.S.'s future trade policies should be. That report is already starting to shake things up, because it advocates, among other things, postponing for now the opening of the new GATT (General Agreement on Tariffs and Trade) round (of multilateral trade negotiations), which the Reagan administration has wanted to open next year.

While some within the Republican Party must be dissatisfied that Senator Danforth went along too much with these moves by the Democratic Party to heighten party partisanship, this dissatisfaction did not surface in the course of [deliberations on] the retaliatory resolutions and bills. On the contrary, "retaliation" had the distinct characteristic of being beyond party factions. Thus, it appears that one factor that made this possible was the

feeling of crisis on the part of the agriculture senators, which was somewhat hidden and overshadowed by the issues of telecommunications equipment and automobiles. It is true that "had the 80 agriculture senators not acted against the background of the agricultural crisis, which had deepened due to the slump in exports, the unanimous passage of the bill at 92 against 0 would have been absolutely impossible," (according to a member of Senator Packwood's staff).

(5) Accumulation Effect Over the Years

If a centrifugal force was released and pulled Congress in a certain direction, from where did the centripetal force, which focused the energy, come? It hardly needs to be stated that these dynamics were at work: "If Congress doesn't set time limits for itself, nothing gets done. This time, because the appropriate deadline of 1 April suddenly appeared from the outside, Congress was able to concentrate its actions," (a member of Senator Heinz's staff). The fact that specific, visible demands to Japan to open its markets, taking into account the demands of Congress, were put forth in the four-sector MOSS negotiations, had the effect of focusing the attention of the Congressmen involved.

However, looking at the whole picture, it may be accurate to say that "retaliation" was "the result of a gradual accumulation over the past 3 or 4 years of Congressional frustration with the U.S. administration and Japan," (a member of Senator Dole's staff). Everywhere, people were saying, "We've already heard enough of packages (the Japanese Government's foreign economic measures)," and everyone felt exasperated to the effect that "If your promises are good, show us with results." This had been building up together with an internalized frustration on the part of the administration that while the "Ron-Yasu" relationship was good, the Japanese Government was being slow to open its markets. In the negotiations on telecommunications equipment, which became the direct catalyst for the explosion of dissatisfaction from the Congressmen, the fact that the procurement agreement for Nippon Telegraph and Telephone had not yet yielded the kind of results expected was said to be proof above all else that Japan gave "just promises, with no results." Members of the staffs of both Senators Danforth and Chafee said, "The feeling that we had been deceived by this agreement heightened the Congressmen's dissatisfaction with Japan."

Senator Danforth is the one who felt this exasperation more directly than anyone. Senator Danforth declared that until Japan opens its markets in a substantial manner, meeting with visitors from Japan like lobbyists would be "a waste of time." And in fact, he even went so far as to refuse to meet with the Japan-U.S. Parliamentary Friendship League, which visited the U.S. in March, and with Chairman (and former Foreign Minister) Saburo Okita and Akio Morita (chairman of Sony) of the Foreign Economic Problems Advisory Council.

Senator Danforth was also irritated that although he and Senator Packwood both did their utmost to have the local content bill supported by Chrysler and the UAW defeated in the Senate, Japan did not understand these efforts and still

kept its markets closed. "Did Japan realize how much courage was necessary for a Senator with the automobile industry in his home state to oppose the local content bill, and how much pain it caused?" said a member of Danforth's staff.

(6) Escape Valve and Brakes (Deterrence)

As stated previously, although the resolution passed at the deliberations on 2 April, there were four members of the Senate Finance Committee who opposed the Danforth bill: Chafee, Wallop (both Republicans), Moynihan, and Matsunaga (both Democrats). Among these, Senator Matsunaga, who is of Japanese descent, gave the following as a reason for passage of the resolution: "It was thought that it was necessary to quiet and dispel Congress's feelings of hatred toward Japan by passing a nonbinding resolution." This was the so-called "escape valve" political technique.

Many of the Senators who voted in favor of the draft resolution were able to explain to their respective constituencies as a result of their votes that "I stated that we must take a strong stance toward Japan." Even Senator Packwood, who originally did not intend to go so far as passing a bill, but ultimately respected the wishes of the committee and supported the bill, "had planned to keep interest from turning to blatantly protectionist bills such as those for import surcharges, to keep in one quarter all the destructive movements that were springing up all over, to try to take the teeth out of those movements," according to a member of the Finance Committee staff. In particular, when the movements got so bad that Senator Heinz, who was even a member of the Finance Committee, proposed a bill on the 28th introducing a 20 percent import surcharge aimed just at Japan, he certainly must have wanted to use "retaliation" as a kind of deterrence. It appears that Majority Leader Dole, who supported both the draft resolution and the bill, agreed with this.

(7) Leadership Structure and Procedures (Politics of Congress)

I have stated previously that Senators Packwood and Danforth had each just been selected as chairman of their respective committees, the Finance Committee and the Commerce Committee. It is common for new committee chairmen to work especially hard to assume leadership, to make an impression. For the ambitious, vigorous new chairmen, "retaliation" could be seen as a unique "proof of leadership." Senator Danforth, in particular, had the unique position of being both Chairman of the Commerce Committee and Chairman of the Finance Committee's Trade Subcommittee, and was approaching a crucial point for a politician in getting one step closer to joining the leadership of the Republican Party. Moreover, Senator Danforth was benefitting from a tail wind: In the in-house elections after Majority Leader Howard Baker stepped down last year, Danforth supported current Majority Leader Dole contributed significantly to his being elected, and gave the nominating address for Majority Leader Dole. Thus Senator Danforth is close to Senator Dole, and Senator Dole is "indebted" to Senator Danforth. That Senator Packwood was finally overcome by Senator Danforth was probably due to the subtle workings behind the scenes of the latter's relationship with Majority Leader Dole.

At the same time, the Senate has special "procedures": unlike the House of Representatives, where the committee chairmen hold the exclusive right to propose legislation, in the Senate, senators may go over the heads of committee chairman and propose legislation directly. In the Senate, the committee chairmen must respond more sensitively to the views of the members of their committees than do the chairmen in the House, and must respect the general consensus. This fact had an influence on the change in Senator Packwood's position at the final stages.

Another factor we cannot overlook is the moves of the Congressional staffers. Since the Watergate scandel, which strengthened Congress in relation to the administration, the functions of the Congressional staffer had continued to grow, even to the point of a "staf-flation" phenomenon at one time. This time, too, the trade staffs of the major members of the Finance Committee played more than a background role at every step and stage, devising strategies, drafting resolutions and bills, and coordinating among the committee members. What these staffers in their thirties and forties had in common was a belief not in the protection of basic industries that were no longer competitive internationally, but in the strengthening of the export industry based, centering on high tech industries; they also shared a strong sense of crisis that the U.S. may be losing the fight for leadership in high technology to Japan. In addition, they seemed to have clearly libelous ideas, leaving Japan out in the cold; they had a distrust of Japan, centering on the "Japan as freeloader" argument to the effect that Japan did not contribute fully to the preservation and improvement of the international trade system--rather, Japan had become a destroyer of the system. These thoughts and feelings surfaced strongly in the resolutions and bills as well as the statements of the Senators at the hearings in the course of the deliberations.

What Did Not Happen?

The resolution and bill passed the Finance Committee and the full session. We have already seen "what happened." But it is also important to see "what did not happen." The most important thing that did not happen was that the bill did not pass the full session at a single stroke. This was because in addition to the fact that the House of Representatives, which has the right to initiate bills relating to revenue, did not do anything, even in the Senate itself, Majority Leader Dole ordered "a cooling off period." And in view of President Reagan's preliminary positive appraisal of the 9 April market opening policy of Prime Minister Nakasone and the President's attempts to calm the situation, Senator Dole was not mistaken in giving those instructions. The Congress had to return to its primary tasks of tax reform and drafting an FY86 budget aimed at reducing the federal budget, and Majority Leader Dole urged that it was necessary to take a temporary break from "retaliation" in trade.

Next, although energy had gathered both inside and outside Congress for "retaliation," energy was not brought together to oppose this, and even in lobbying in opposition to retaliation, "the Japanese Embassy did not give anything but polite and diplomatic explanations," according to a member of the Finance Committee staff. Although some people within the Japanese Government

had wanted the U.S. administration--especially Secretary of State Shultz--to play this role, their hopes ended up disappointed.

In addition, there was absolutely no movement in Congress like a "Congressional alliance for Japanese interests" to understand and support the concerns and position of Japan. If the target of retaliation had been a European country of a Latin American country--let alone Israel--ethnic groups and politicians would certainly have lobbied against it. Even Senator Matsunaga, who is of Japanese descent and was the only one to play such a role this time, "did not consider discussing the Japan problem separately because of being of Japanese descent or consider cooperating [with Japanese interests] in dealing with the issue; there was no time." Rather, instead of opposing the bill on the grounds of being "of Japanese descent," Senator Matsunaga emphasized the interests of his electorate, stating, "I thought it would have a detrimental effect on tourism from Japan, which is Hawaii's biggest industry."

Moreover, one should probably point out that a "structural instability" in the American economy and society lay behind the outbreak of "retaliation."

First, there was a feeling of insecurity that prosperity under Reaganomics (Reagan's economic concepts and policies) was simply a mirage built upon record-breaking federal deficits and trade deficits. That "retaliation" occurred in the midst of a slump in the economic slowdown of January to March of this year, (when growth slowed sharply to 0.7 percent--a complete turn from last year's high growth of 6.8 percent, the highest in 33 years) was probably due to a premonition, felt everywhere, of such instability. Moreover, there was a feeling of helplessness that this year's trade deficit surpassed last year's record-breaking trade deficit, that the deficit with Japan still accounted for one-third, and that it too was the highest ever. Also, there was the warped foreign economic policy of generally abandoning macroeconomic adjustment through fiscal, monetary and exchange rate policies, and concentrating solely on opening markets in individual sectors; and the cause of this was a dangerous "single national capitalism" concept to the effect that "if not for the United States there would be nothing." The American agricultural recession was actually simply a victim of this. In addition, there was a feeling of uneasiness that in the fierce struggle between Japan and the United States for leadership in high tech sectors, which would be the mainstream of the future, the United States might lose to Japan. There was also hostility toward imported products from the NICs [newly industrialized countries] like South Korea and Taiwan, which had developed rapidly through the 1970's. A feeling of panic was spreading that markets would be snatched away by these countries, after Japan, and some argued that these countries were turning to the United States because Japan was not opening its markets to developing countries. On the other hand, more than fearing that these NICS would be able to compete as well as Japan, they wanted only to let Japan's blood, and cried out about "being hurt by the closed nature of the Japanese market." The Japan-U.S. trade friction is rapidly expanding into "Japan-U.S.-NICS friction." As exports account for an increasing proportion of the U.S.'s own gross national product (GNP) and as exports become increasingly important to economic prosperity, this will gradually give more impetus to the perception of a "zero sum game" with other exporting nations, such as Japan and the NICS.

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POLITICAL AND SOCIOLOGICAL

BRIEFS

BUSINESS EXECUTIVES WELCOME CABINET RESHUFFLE--Tokyo, 28 Dec KYODO--Business executive Saturday welcomed the cabinet reshuffle carried out by Prime Minister Yasuhiro Nakasone. Yoshihiro Inayama, president of the Federation of Economic Organizations (Keidanren), said the new cabinet demonstrated Nakasone's policy of placing the right persons in the right places. Takashi Ishihara, president of the Japan Committee for Economic Development (Keizai Doyukai), said he welcomed the fact that key ministers have been retained to maintain the continuity of the government policy. Ishihara expressed the hope that Nakasone's leadership would be able to cope with domestic and international problems. Economic leaders in the Osaka area urged the government to employ a flexible fiscal policy to check the deflationary effect of the drastic rise in the value of the yen and ease international trade friction. Bumpei Otsuki, president of the Japan Federation of Employers' Associations (Nikkeiren), called on the Nakasone administration to stick to a policy of seeking fiscal reconstruction without tax increases. Noboru Goto, president of the Japan Chamber of Commerce and Industry, expressed the hope that the government would carry out administrative reforms, including the privatization of the deficit-ridden Japanese national railways, and a comprehensive reform of taxation systems. /Text/ /Tokyo KYODO in English 1200 GMT 28 Dec 85 OW/ 12228

ABE ON FULFILLING GLOBAL RESPONSIBILITY--Tokyo, 28 Dec KYODO--Shintaro Abe, who was retained as foreign minister, said Saturday he would do his best to continue and develop Japanese diplomacy in the direction in which he has steered it for the past 3 years. The most important job at present concerns preparations for the Tokyo summit of seven major advanced democracies on 4-6 May, Abe said. Japan must fulfill its responsibility in the world and gain global trust now that its influence in the world is growing, Abe said. /Text/ /Tokyo KYODO in English 1152 GMT 28 Dec 85 OW/ 12228

NAKASONE TO VISIT CANADA--Tokyo, 18 Dec KYODO--Japanese Prime Minister Yasuhiro Nakasone plans to visit Canada 12-16 January, government sources said Wednesday. A Canadian embassy spokesman said that the matter is "still under discussion" and that he cannot give official confirmation on Nakasone's itinerary. "Of course, we hope he finds free time and accepts our longstanding invitation," the spokesman said. The government sources said Nakasone will leave Tokyo 12 January and meet Prime Minister Brian Mulroney in Ottawa 13 January. He will spend a night in Vancouver before returning home 16 January. Foreign Minister Shintaro Abe will depart around 10 January for Washington for talks

with U.S. Secretary of State George P. Shultz on trade and other bilateral and international issues, according to the sources. After the Washington trip, the sources said, Abe will join the Nakasone party in Ottawa and return to Tokyo by 14 January to prepare for Soviet Foreign Minister Eduard Shevardnadze's Japan visit 15-19 January. /Text/ /Tokyo KYODO in English 0430 GTM 18 Dec 85 OW/ 12228

VISIT TO CHINA PLANNED--Tokyo 29 Dec KYODO--Saburo Tsukamoto, chairman of Democratic Socialist Party (DSP), plans to visit China next spring for talks with Chinese leaders, including senior party leader Deng Xiaoping, on Japan-China economic relations, DSP sources said Sunday. Tsukamoto and other DSP officials are expected to visit China's special economic zones, a showcase of its open economic policy, according to the sources. /Text/ /Tokyo KYODO in English 0416 GMT 29 Dec 85 OW/ 12228

NAKASONE CANADIAN TOUR SET--Tokyo, 24 Dec KYODO--Prime Minister Yasuhiro Nakasone will leave for Canada 12 January for an official visit, the government said Tuesday. Nakasone will meet Canadian Prime Minister Brian Mulroney twice, in Toronto and Ottawa, government officials said. The dates of the summit meetings are not known. He will also visit Vancouver before returning to Tokyo 16 January. Foreign Minister Shintaro Abe, if retained in a cabinet reshuffle which will probably be announced Sunday, will leave Tokyo 9 January for the United States and meet Secretary of State George Shultz the following day. Abe will later go to Canada to join Nakasone. Since becoming prime minister in 1982, Nakasone has visited the United States, Britain, France, West Germany, Italy and the European Community Commission in Brussels, but this will be his first official visit to Canada. These countries and Japan are participants in the annual summing meeting of seven advanced democracies. Japan will host the next summit of the seven in Tokyo 4-6 May. /Text/ /Tokyo KYODO in English 0204 GMT 24 Dec 85 OW/ 12228

SHEVARDNADZE CONGRATULATES ABE ON REAPPOINTMENT--Tokyo, 2 Jan KYODO--Soviet Foreign Minister Eduard Shevardnadze sent a congratulatory telegram to Foreign Minister Shintaro Abe over Abe's reappointment to the ministerial post only 2 days after last Saturday's cabinet reshuffle, according to Foreign Ministry sources. The congratulatory message came through the Soviet Embassy here and its unusually quick timing led ministry sources to believe that it reflects Shevardnadze's big expectation toward his visit to Japan 15-19 January. /Text/ /Tokyo KYODO in English 0501 GMT 2 Jan 86 OW/ 12228

CSO: 4100/67

MILITARY

JAPAN TO TRANSFER MILITARY TECHNOLOGY TO UNITED STATES

OW271223 Tokyo KYODO in English 1216 GMT 27 Dec 85

/Text/ Tokyo, 27 Dec KYODO--Japan has agreed to transfer to the United States image homing technology as the first such arrangement under a Mutual Defense Assistance Agreement between the two.

The two governments Friday night signed the detailed arrangements for the transfer, following an exchange of notes concerning the matter in November 1983.

The image homing technology is a small system using charge coupled devices (CCD), first developed by the Technical Research and Development Institute of the Defense Agency for use with portable surface-to-air missiles. It was trial manufactured in 1983.

It is believed that the technology will be transferred to the United States around summer next year after consultations by the Joint Military Technology Commission (JMTC).

The detailed agreements for the transfer of military technologies signed Friday evening place tight restrictions on the use of the military technology concerned for purposes other than that specified, and provide that its use must not contradict the UN charter.

The agreements prohibit the transfer of the technology to any third party without the Japanese Government's consent in writing. They also prohibit the use of improved versions of the military technology concerned for purposes other than that specified without the Japanese Government's authorization. They state that secrets associated with the military technology to be transferred shall be protected by the Mutual Defense Assistance Agreement and other directives and regulations.

It is also stipulated that the U.S. Government must pay the Defense Agency of Japan an appropriate amount of research and development expenses.

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CSO: 4100/67

MILITARY

JAPAN'S GROUND SELF-DEFENSE FORCE 'PAPER TIGER'

OW041129 Tokyo KYODO in English 0757 GMT 4 Jan 86

/Article by Antonio Kamiya/

/Text/ Tokyo, 4 Jan KYODO--Last November, 3,000 military men were engaged in an exercise at the foot of Mount Fuji.

Outside the exercise ground's barb-wired periphery was an unusual sight: contingents of riot police standing guard to protect the very people supposedly doing their job of defending Japan.

For these soldiers--half of them from the United States and the other half from Japan--the immediate enemy was not hypothetical invaders from the Soviet Union, but far lest domestic extremists who have been waging a continuous campaign against Japanese "militarism."

With up to 2,450 policemen to keep troublemakers away, the week-long exercise went off, it was later reported, without a hitch.

But the unflattering reality of requiring policemen to protect the soldiers had the Japanese military hosts seething.

"We have trouble explaining to our American friends why we need policemen to protect us," fumed a Self-Defense Force officer.

Yet under Japan's unique war-renouncing constitution, soldiering in Japan is a politically harzardous business.

Although Japan is the eighth largest spender in the world for national defense, the Left in Japan still do not even recognize the legal existence of the Self-Defense Forces, as Japan's postwar military establishment is known.

Left-wing politicians still selectively boycott any function connected with the armed forces.

The problem is particularly evident with the Ground Self-Defense Forces (GSDF), the 150,000-man army which serves as the most visible target for political attack from the Left.

Amid such political minefields, the Self-Defense Forces have sought to tread gently and "play it safe," especially in training and maneuvers.

Because of possible conflict with local communities, the government has shut the Self-Defense Forces up in specified exercise grounds for maneuvers, banning them from moving openly in the country as is common in other countries.

The result is that the GSDF cannot conduct drills involving anything larger than a single division.

"It's difficult when you don't know the terrain you are to defend," says Masaaki Higashi, the officer in charge of training of the Eastern Army, in an interview at headquarters in Tokyo.

Even the size of the training grounds is shrinking all the time, nibbled away by private developers who claim back their land.

The Fuji training ground, one of the largest in Japan, is an example. At Kita Fuji, the Ground Self-Defense Forces have lost nearly 80 percent of the land, and another 20 percent in the adjoining Higashifuji training center.

Where tanks once rumbled and soldiers charged, now golfers tee off on links reclaimed from the Self-Defense Forces.

"Some developers are now talking of building a ski resort on the Fuji slopes," Higashi says with resignation.

The scarcity of training ground is affecting "Jietai" or Self-Defense Force training, especially in the artillery and mobile warfare that is central to any modern war.

Today's howitzers can score hits at a range of 30 km, while at Higashifuji, the GSDF is allowed to lop the cannot shells a maximum of 3 km, and no more.

But that is not all. Under agreements signed with the local authorities, the GSDF have restricted cannon firing to daylight hours and the early evening.

Indeed, deference to local wishes is such that, Higashi says, the GSDF breaks off cannon fire for 2 hours in the evening "in order to avoid disturbing the milking of the local cows."

Under Defense Agency regulations, the SDF renegotiates terms for the right of using the training grounds every 5 years with the local authorities and landowners.

One concern is noise. "We would like to extend artillery training into the night, indeed to all hours of the day--approximating the conditions of real war--but we can't," Higashi says.

But if the GSDF can't approximate the conditions of warfare, what about the quality of training?

Under the postwar training doctrine, personal safety and accountability comes first and foremost with the SDF.

In rifle shooting practice, for instance, the GSDF assigns one training officer to each shooter, whereas in the U.S. Army, Higashi says, there is only one safety officer for a whole platoon.

Apart from the safety officer, the GSDF also assigns another officer each for recovering the spent cartridges.

"We've got to count all the cartridges in order to account for the number of cartridges shot," Higashi explained, reflecting the stiff Japanese laws on firearms.

Personal safety concerns have also made the GSDF look less than professional in military maneuvers.

Commanders, for example, are forbidden to move their troops on the ground beneath cannon trajectories. "There is fear that shells could blow up in midair with the soldiers below getting injured by the falling shrapnel," Higashi said.

Helicopter-borne soldiers in maneuver are not allowed to jump before their craft touch the ground as in other armies. Instead, they are told to wait until the helicopters land properly. "The fear is that the soldiers might break a leg when they jump," Higashi explained.

"It's a paper tiger," remarked one GSDF officer, who said he was disappointed with the way the SDF is being sacrificed for political expediency.

Behind the apparent timidity of Japan's GSDF, of course, lies the unique position of the SDF.

"We are not an army in the legal sense of the word," says Lt Gen Kane Masuoka, commander of the Tokyo-based Eastern Army. "Of course, I consider myself a soldier."

/12228
CSO: 4100/67

MILITARY

GROWTH IN DEFENSE SPENDING SLASHED TO 5.1 PERCENT

OW230929 Tokyo KYODO in English 0917 GMT 23 Dec 85

/Text/ Tokyo, 23 Dec KYODO--The Finance Ministry has slashed the growth in Japan's defense expenditure from 7 to 5.1 percent for the next fiscal year despite a plea from the defense minister for a steeper raise, officials said Monday. The cut represents something between 60 billion yen and 140 billion yen from the 3,356.8 billion yen budget request put forth by the Defense Agency.

The Finance Ministry budget draft was formally approved by the cabinet Monday evening. However, the draft is likely to be revised upward through interdepartmental bargaining in the next couple of days.

Cuts ordered by the Finance Ministry include major weapons systems ordered by the Defense Agency as part of Japan's defense buildup for the next 5 years. The Finance Ministry budget draft authorizes the purchase of 3 destroyers, 1 less than the defense agency hoped for, 10 U.S.-developed F-15 jet fighters, 8 less than the defense agency proposal, and 7 P3C antisubmarine patrol aircraft, instead of 12 requested by the agency. Other weaponry that fell under the Finance Ministry axe included 9 type 74 tanks, Japan's main battle tanks, from 65 down to 56, and 4 C155 howitzers, from 47 to 43, for the Ground Self-Defense Force.

The Finance Ministry also ordered the Defense Agency to trim its shopping plan for the advanced Patriot Antiaircraft Missile system, cutting the defense request from four batteries to three.

The only major weapons systems that escaped the Finance Ministry axe were the Defense Agency's shopping plan for a submarine and eight antitank helicopters.

Under the Finance Ministry plan, the Defense Agency budget would amount to 0.979 percent of Japan's gross national product (GNP) forecast for fiscal 1986, which starts on 1 April next year. The Finance Ministry cuts came despite a direct plea from Defense Agency Director General Koichi Kato to Finance Minister Noboru Takeshita to keep the Defense Agency budget intact. In a meeting with Takeshita last Saturday, Kato cited the "continued severity" in the Far East military balance for the necessity to keep up military spending.

In a budget request submitted to the government in August, the Defense Agency requested a 3,356.8 billion yen budget for fiscal 1986, and asked the government to allot 80 billion yen in certain personnel costs outside the main budget.

As in previous years, however, the Finance Ministry draft is expected to be revised upward in a series of negotiations between officials from the two ministries, with the defense caucus within the ruling Liberal-Democratic Party (LDP) expected to put its political weight into the bargain. The final defense budget, political sources say, is expected to rise by around 1 percentage point to around 6 percent.

This year's defense budget marks a 6.9 percent increase from the previous year, compared to a 5.1 percent growth allowed by the Finance Ministry. The fiscal 1986 Defense Agency budget marks the 1st year of an 18.4 trillion yen 5-year military buildup plan the government approved in Spetember. A final government budget is scheduled to be ready this Saturday.

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CSO: 4100/67

MILITARY

JAPAN'S DEMOCRATIC SOCIALIST PARTY ON SDF, SDI

OW020647 Tokyo KYODO in English 0621 GMT 2 Jan 86

/Text/ Tokyo, 2 Jan KYODO--The moderate opposition Democratic Socialist Party (DSO) Thursday called for Japan's dispatch of its Self-Defense Forces (SDF) personnel to serve on UN peacekeeping missions and UN medical assisting teams abroad.

The number three opposition party said SDF personnel should be sent abroad for such missions within the framework of the Japanese Constitution and as part of Japan's cooperation for improving the UN peacekeeping role.

The DSP clarified its position in a new proposal on peace marking the start of the international year of peace in 1986.

The DSP also proposed the formation of a rescue team to be dispatched promptly to help relief operations when major disasters occur. Overseas. In the future, the proposed rescue team should be joined by SDF personnel, the DSP said.

The DSP position on the dispatch of SDF personnel for UN missions and other relief operations sharply contrast with strong objections by the number one and number two opposition parties--the Japan Socialist Party and Komeito--against sending SDF troops overseas for any purpose.

The two parties said such action could lead to sending of SDF personnel for military purposes.

Regarding the U.S. Star Wars (SDI) plan, the DSP urged the government to study it carefully until it could be confirmed as a purely defensive weapons plan.

This is a position very close to the position of the government and the ruling Liberal-Democratic Party.

The government announced its understanding of the SDI research and is now studying whether to participate in the project.

/12228
CSO: 4100/67

BRIEFS

JAPAN-U.S. YEN, DEFENSE COSTS DISCUSSIONS--Tokyo, 25 Dec KYODO--The impact of the yen's appreciation on U.S. defense spending in Japan will be a major topic for discussion at Japan-U.S. working-level defense talks in Hawaii in mid-January, Japanese officials said Wednesday. The officials said the United States has informally asked Japan to increase its share of defense outlays to make up for a de facto devaluation of the U.S. dollar. Japan has refused on the grounds that it would be difficult for the government to increase its share of the defense burden because a draft defense budget has already been worked out by the Finance Ministry. The United States spends about 2.3 billion dollars annually on American forces in Japan. The recent appreciation of the yen will result in a virtual shortfall of more than 100 billion yen in the year up to next September. About 20,000 Japanese employed at U.S. military installations in Japan, in turn, have benefitted from the yen's appreciation. Japan has been contributing toward U.S. defense expenditures in Japan since fiscal 1978, despite a prohibition against doing so under the Status of Forces Agreement. The Defense Agency sought a budgetary appropriation of 83.7 billion yen to support U.S. defense efforts in fiscal 1986. The U.S. Navy has reduced the working hours of 177 Japanese employees at its naval base in Yokosuka to cut costs. /Text/ /Tokyo KYODO in English 1123 GMT 25 Dec 85 OW/ 12228

CSO: 4100/67

ECONOMIC

DEFENSE AGENCY'S BUDGET PROPOSAL FOR 1986 ANNOUNCED

Tokyo BOEI ANTENA in Japanese Sep 85 pp 25-41

[Text] I. Basic Policy

After more than 3 months of deliberations and coordination among the various sections of the Defense Agency, the FY86 budget proposal was decided on at the 28 August meeting of the Defense Council.

Keeping in mind the need for a balance between operational and support units, the budget proposal is based on the following policy:

(1) Hoping to complete the outline of the defense plan, and referring to the FY86-FY90 interim operating estimate (which is being drawn up now), we will strive to provide for steady improvement of ordnance and for research and development.

(2) We will strive to maintain and improve the level of training.

(3) We will strive to improve the handling of troops.

(4) We will try to improve facilities provided and conditions on military bases.

Incidentally, in drawing up the budget proposal, we tried to optimize and rationalize continuing expenditures, and thorough consideration was given to priority distribution of financial resources.

II. Total Amount, Percent Increase

The breakdown of major expenditures in the budget proposal is as follows:

The combined total FY86 budget for the Defense Agency and the Defense Facilities Administration Agency is Y3,356,600,000,000, a 7 percent increase over the budget for the previous fiscal year (a 6.9 percent increase over the previous fiscal year). Of this, the Defense Agency Headquarter's portion is Y3,023,400,000,000 (an increase of 7.4 percent), and the Defense Facilities Administration Agency's portion is Y333,200.000.000 (an increase of 3.4 percent). When defense-related expenditures such as those for the National Defense Council are added, the FY86 proposed budget comes to Y3,356,800,000,000, an increase of 219.6 billion yen or 7 percent.

III. Important Measures

The following are the important items in the budget proposal:

(1) Replenishment of Ordnance

Where fighting equipment is concerned, we are steadily trying to qualitatively improve our defense strength.

a) For the Ground Self-Defense Force, we are procuring 65 model-74 tanks, 47 155-millimeter guns, and 8 antitank helicopters (AH-1S). In addition, we are exchanging the improved Hawk 1.5's for improved Hawk II models.

b) For the Maritime Self-Defense Force, we are procuring 3 escort ships, 1 submarine, and 12 antisubmarine patrol planes (P-3C). In addition, we will procure 4 minesweeping helicopters (MH-53E).

c) For the Air Self-Defense Force, we will procure 18 fighter planes (F-15) and 2 transports (C-130H), and will replace the Patriot with the Naiki. In addition, we will procure 15 midlevel training planes (T-4).

(2) Improvement of Ability To Carry On Sustained War, and Preparedness To Adapt

In addition to trying to improve our ability to carry on sustained war (by measures such as stockpiling munitions), to improve our use and management of torpedos and mines, and to improve our antiaircraft missiles, we will strive to continue maintaining and improving new automatic warning control systems.

(3) Promotion of Education and Training

In order to fully realize the potential of the Self-Defense Force in an emergency, we must work to promote its education and training in peacetime, and to maintain and improve its level of training. From this point of view, we are requesting important expenditures for such things as training time and training equipment. At the same time, we are trying to secure funds for repairs.

(4) Personnel Policy

A good personnel policy is vital to maintaining and improving the welfare and morale of personnel. In line with this, trying to gradually eliminate bunk beds for cadets and 9.5 tsubo [342 square feet] living quarters, we will continue to make personnel policy a priority as we have done in FY85.

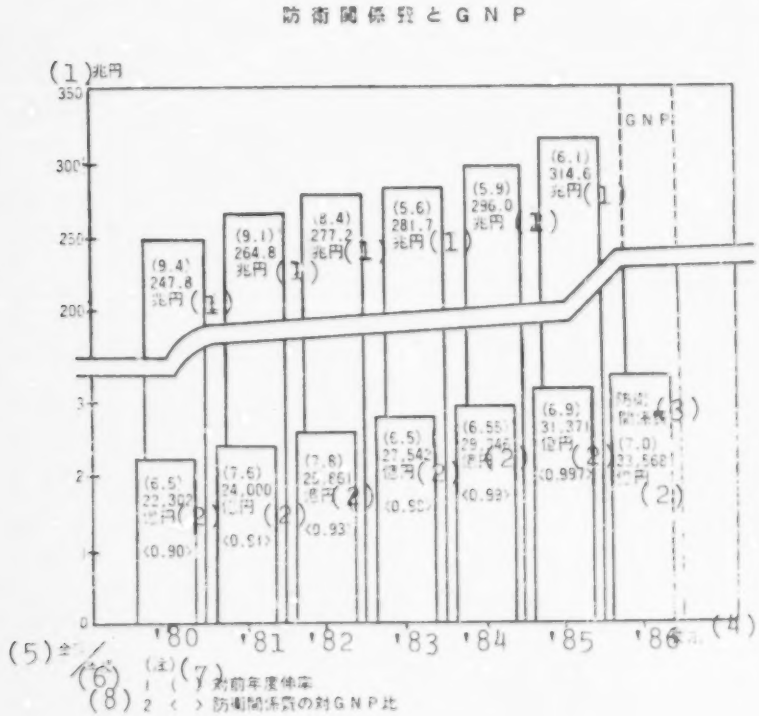
(5) Promotion of Research and Development

We will continue development of new tanks and of a new antitank (carrier-based) helicopter system. We will also start development of a division-to-air data processing system, and of a ship/air-to-ship guided missile. In addition, we will carry out fundamental research, and try to improve the qualitative level of our future defense strength.

(6) Personnel Strength, Percent of Positions Filled

To guarantee the minimum personnel strength needed to operate and maintain our defense, we will increase personnel strength in the Maritime and Air Self-Defense Forces, and in the Joint Staff Council by 2,412. We will increase the percent of filled positions in the Ground Self-Defense Force by 0.4 percent, making it 86.73 percent.

Figure 1. Defense-Related Expenditures and the GNP



Key:

1. 1.0 trillion yen
2. 100 million yen
3. Defense-related expenditures
4. Proposed
5. Total amount
6. Fiscal year
7. (Note) 1. ( ) increase over the previous fiscal year
8. 2. < > percentage of the GNP for defense-related expenditures

(Data)

Table 1. Proposed Budget for Defense-Related Expenses

(資 料)

1 防衛関係費の概算要求額 (1)(単位：億円・%)

(2)区分	(3)57年度	(4)58年度	(5)59年度	(6)60年度	(7)61年度概算要求額
(8)防衛関係費	25,861	27,542	29,346	31,371	33,568
(9)対前年度伸率	7.8	6.5	6.55	6.9	7.0
(10)1 防衛本庁	22,932	24,554	26,239	28,147	30,234
(9)対前年度伸率	7.9	7.1	6.9	7.3	7.4
(11)2 防衛施設庁	2,929	2,987	3,106	3,224	3,332
(9)対前年度伸率	6.9	2.0	4.0	3.8	3.4
(12)3 国防会議	1	1	1	1	1

(13)注：1 各年度の予算額は、当初予算額である（以下同じ）。
(14) 2 計数は、原則として四捨五入によっているので計と符合しないことがある（以下同じ）。

Key:

1. (Unit: 100 million yen; percent)
2. Category
3. FY82
4. FY83
5. FY84
6. FY85
7. FY86, proposed budget
8. Defense-related expenditures
9. Increase over previous fiscal year
10. 1. Defense Agency Headquarters
11. Defense Facilities Administration Agency
12. National Defense Council
13. Note: 1. The budget amount given for each fiscal year is the original budget amount. (This is also true in subsequent tables.)
14. 2. In principle, the figures are rounded off, so in some cases the totals do not add up. (This is also true in subsequent tables.)

Table 2. Proposed Budget for Expenditures

2 歳出経費要求額

(1)(単位：百万円・%)

(2)区分	(3) 61年度概算要求額	(4) 60年度予算額	(5) 対前年度増△減額	(6) 対前年度増△減率
(7)(防衛本庁)				
(8)陸上自衛隊	1,231,122	1,161,200	69,922	6.0
(9)海上自衛隊	804,731	733,267	71,464	9.7
(10)航空自衛隊	884,771	827,519	57,252	6.9
(11)小計	2,920,624	2,721,985	198,639	7.3
(12)内部部局	7,164	6,939	225	3.2
(13)統合幕僚会議	2,043	1,935	108	5.6
(14)防衛大学校	9,839	9,203	636	6.9
(15)防衛医科大学校	11,895	11,410	485	4.3
(16)防衛研究所	827	761	66	8.7
(17)技術研究本部	66,507	57,819	8,687	15.0
(18)調達実施本部	4,531	4,607	△ 77	△ 1.7
(11)小計	102,805	92,674	10,131	10.9
(19)防衛本庁計	3,023,429	2,814,659	208,770	7.4
(20)(防衛施設庁)	333,188	322,357	10,831	3.4
(21)防衛庁合計	3,356,617	3,137,016	219,601	7.0
(22)(国防会議)	134	132	2	1.4
(23)防衛関係費合計	3,356,751	3,137,148	219,603	7.0

Key:

1. (Unit: 1 million yen; percent)
2. Category
3. FY86, proposed budget
4. FY85 budget
5. Amount increased (△ decreased) over the previous fiscal year
6. Percent increased (△ decreased) over the previous fiscal year
7. (Defense Agency Headquarters)
8. Ground Self-Defense Force
9. Maritime Self-Defense Force
10. Air Self-Defense Force
11. Subtotal
12. Internal departments
13. Joint Staff Council
14. Defense Academy
15. Defense Medical College
16. National Defense College
17. Technical Research and Development Institute
18. Central Procurement Office
19. Defense Agency Headquarters Total
20. (Defense Facilities Administration Agency)
21. Defense Agency Total
22. (National Defense Council)
23. Total defense-related expenditures

Table 3. Contract Authorization; Continuing Expenses

3 国庫債務負担行為・継続費

(1) 総額 (新規分) (2) (単位：百万円・%)

(3) 事項	(4) 61年度 提出要求額	(5) 60年度 予算額	(6) 対前年度 増△減額	(7) 対前年度 増△減率
(8) 1 国庫債務負担行為	1,556,821	1,095,110	461,711	42.2
(9) (防衛本庁)	1,494,427	1,037,998	456,429	44.0
(10) 武器購入	270,845	176,056	94,789	53.8
(11) 通信機器購入	60,260	41,727	18,533	44.4
(12) 弾薬購入	155,962	141,003	14,960	10.6
(13) 航空機購入	545,146	360,897	184,248	51.1
(14) 艦船建造	57,690	25,330	32,360	127.8
(15) 装備品等整備	215,829	185,953	29,876	16.1
(16) 研究開発	53,013	28,781	24,232	84.2
(17) その他	135,681	78,250	57,431	73.4
(18) (防衛施設庁)	62,394	57,112	5,282	9.2
(19) 2 継続費	154,475	159,795	△ 5,320	△ 3.3
(20) 合計	1,711,296	1,254,905	456,391	36.4

(21) 後年度負担額 (2) (単位：百万円・%)

(3) 事項	(4) 61年度 提出要求額	(5) 60年度 予算額	(6) 対前年度 増△減額	(7) 対前年度 増△減率
(22) 1 新規分	1,681,399	1,232,807	448,592	36.4
(8) (1) 国庫債務負担行為	1,527,794	1,073,274	454,520	42.3
(9) (防衛本庁)	1,477,880	1,027,585	450,295	43.8
(10) 武器購入	269,729	174,919	94,809	54.2
(11) 通信機器購入	60,191	41,707	18,484	44.3
(12) 弾薬購入	154,153	140,015	14,138	10.1
(13) 航空機購入	541,512	360,080	181,432	50.4
(14) 艦船建造	57,243	25,236	32,007	126.8
(15) 装備品等整備	214,597	185,256	29,341	15.8
(16) 研究開発	49,915	26,894	23,021	85.6
(17) その他	130,539	73,477	57,062	77.7
(18) (防衛施設庁)	49,915	45,689	4,225	9.2
(19) (2) 継続費	153,605	159,533	△ 5,928	3.7
(23) 2 既定分	1,122,108	1,073,013	49,095	4.6
(20) 合計	2,803,507	2,305,820	497,687	21.6

Key:

1. (1) Total amount (new portion)
2. (Unit: 1 million yen; percent)
3. Item
4. Proposed budget for FY86
5. FY85 budget
6. Increase (△decrease) over the previous fiscal year
7. Percent increase (△decrease) over the previous fiscal year
8. 1. Contract authorization
9. (Defense Agency Headquarters)
10. Weapons procurement
11. Communications equipment procurement
12. Munitions procurement
13. Airplane procurement
14. Shipbuilding
15. Upgrading of equipment
16. Research and development
17. Other
18. (Defense Facilities Administration Agency)
19. 2. Continuing expenses
20. Total
21. (2) Amount for Future Fiscal Years
22. 1. New portion
23. 2. Existing portion

Table 4. Personnel

4 定　　員　　(1)(単位：人)

(2)区分	(3) 60年度末予算定員			(4) 61年度増員要求			(5) 61年度末予算定員		
	自衛官 (6)	事務官等 (7)	計 (8)	自衛官 (6)	事務官等 (7)	計 (8)	自衛官 (6)	事務官等 (7)	計 (8)
(9)陸上自衛隊	180,000	10,798	190,798	0	(△134) 44	(△134) 44	180,000	10,708	190,708
(10)海上自衛隊	45,199	4,181	49,380	1,415	(△ 48) 20	(△ 48) 1,435	46,614	4,153	50,767
(11)航空自衛隊	46,834	4,469	51,303	952	(△ 58) 18	(△ 58) 970	47,786	4,429	52,215
(12)小　　計	272,033	19,448	291,481	2,367	(△240) 82	(△240) 2,449	274,400	19,290	293,690
(13)内部部局	0	501	501	0	(△ 5) 12	(△ 5) 12	0	508	508
(14)統合幕僚会議	129	34	163	45	2	47	174	36	210
(15)防衛大学校	0	671	671	0	(△ 5) 3	(△ 5) 3	0	669	669
(16)防衛医科大学校	0	1,102	1,102	0	(△ 6) 17	(△ 6) 17	0	1,113	1,113
(17)防衛研究所	0	93	93	0	(△ 1) 5	(△ 1) 5	0	97	97
(18)技術研究本部	0	936	936	0	(△ 10) 7	(△ 10) 7	0	933	933
(19)調達実施本部	0	574	574	0	(△ 6) 6	(△ 6) 6	0	574	574
(12)小　　計	129	3,911	4,040	45	(△ 33) 52	(△ 33) 97	174	3,930	4,104
(20)(防衛本庁計)	272,162	23,359	295,521	2,412	(△273) 134	(△273) 2,546	274,574	23,220	297,794
(21)(防衛施設庁)	0	3,425	3,425	0	(△ 43) 31	(△ 43) 31	0	3,413	3,413
(22)合　　計	272,162	26,784	298,946	2,412	(△316) 165	(△316) 2,577	274,574	26,633	301,207
(23)予備自衛官	43,600			(24)陸 2,000	(25)空 300	(26)海 360	46,260		

(27)注：上記（）内は、定員削減（△315人）及び転出（外務省へ△1人）で表示している。

Key:

1. (Unit: person)
2. Category
3. Personnel budgeted for end of FY85
4. Increase in personnel requested for FY86
5. Personnel budgeted for end of FY86
6. Self-defense officials
7. Administrative officials
8. Total
9. Ground Self-Defense Force
10. Maritime Self-Defense Force
11. Air Self-Defense Force
12. Subtotal
13. Internal departments
14. Joint Staff Council
15. Defense Academy
16. Defense Medical College
17. National Defense College
18. Technical Research and Development Institute
19. Central Procurement Office
20. (Defense Agency headquarters Total)
21. (Defense Facilities Admin. Agency)
22. Total
23. Reserve personnel
24. Ground
25. Air
26. Maritime
27. Note: In ( ) above, decreases in personnel (Δ 315) and transfers (Δ 1 to the Ministry of Foreign Affairs) are not counted.

Table 5. Breakdown of Major Items

5 主要事項の内訳

(1)(単位：百万円)

(2) 区分	(3) 数量 (A)	(4) 総額 (B)	61年度概算要求額 (5)	後年度負担額 (6)	備考 (7)
(8) I 装備の充実					[平均価格 (B)/(A)] (31)
(9) 1 甲類					(千円) (32)
(10) (1) 9mm拳銃	2,500	315	0	315	126
(11) (2) 62式機関銃	35	84	0	84	2
(12) (3) 74式車載機関銃	8	23	0	23	3
(13) (4) 12.7mm重機関銃	26	113	0	113	4
(14) (5) 84mm無反動砲	261	518	0	518	2
(15) (6) 79式対舟艇対戦車誘導弾発射装置	31	1,855	0	1,855	60
(16) (7) 64式81mm迫撃砲	13	42	0	42	3
(17) (8) 155mmりゅう弾砲FH70(仮称)	47	16,313	0	16,313	347
(18) (9) 203mm自走りゅう弾砲	12	4,498	197	4,301	375
(19) (10) 74式戦車	65	25,874	0	25,874	398
(20) (11) 73式装甲車	35	4,128	0	4,128	118
(21) (12) 82式指揮通信車	23	2,001	0	2,001	87
(22) (13) 78式戦車回収車	8	2,030	0	2,030	254
(23) (14) 78式雪上車	22	725	0	725	32
(24) (15) 化学防護車	3	464	0	464	155
(25) 合計		58,984	197	58,787	
(26) 2 誘導弾					
(27) 改良ホーク	1.5	31,672	430	31,241	
(28) ペトリオット	1	111,484	88	111,396	
(29) 短距離地対空誘導弾(短SAM)	17	42,912	0	42,912	2,524
(30) 携帯式地対空誘導弾(携帯SAM)	151	9,449	472	8,977	63
(25) 合計		195,517	991	194,526	

Key:

1. (Unit: 1 million yen)
2. Category
3. Quantity (A)
4. Amount (B)
5. Proposed budget for FY86
6. Amount for future fiscal years
7. Remarks
8. I. Replenishment of equipment
9. 1. Type of equipment
10. (1) 9mm pistols
11. (2) Type-62 machineguns
12. (3) Type-74 mounted machineguns
13. (4) 12.7mm heavy machineguns
14. (5) 84mm recoilless rifles
15. (6) Type 79 antiship, antitank guided missile launchers
16. (7) Type 64, 81mm mortars
17. (8) 155mm shells FH 70 (tentative name)
18. (9) 203mm self-propelled artillery
19. (10) Model-74 tanks
20. (11) Model-73 armored cars
21. (12) Model-82 command comm. vehicle
22. (13) Model-78 tank carriers
23. (14) Model-78 snow tractors
24. (15) Chemical protection vehicle
25. Total
26. 2. Guided missiles
27. Improved Hawks
28. Patriots
29. Short-range surface-to-air missiles (short SAM)
30. Portable surface-to-air missiles (portable SAM)
31. [Average price (B)/(A)]
32. (1,000 yen)

Table 5 continued

(1) (単位：百万円)

(2)区　分	(3)機数 (A)	(4)総額 (B)	(5)61年度概算要求額	(6)後年度負担額	(7)備考
(8) 3 航空機					(9)[平均価格 (B)/(A)]
(10) 陸上自衛隊					
(11) (1) 対戦車ヘリコプター (AH－1S)	8	20,325	106	20,219	2,541
(12) (2) 観測ヘリコプター (OH－6D)	16	4,493	0	4,493	281
(13) (3) 多用途ヘリコプター (HU－1H)	10	7,301	0	7,301	730
(14) (4) 輸送ヘリコプター(CH－47)	5	29,510	0	29,510	5,902
(15) 小計	39	61,629	106	61,523	
(16) 海上自衛隊					
(17) (1) 対潜哨戒機 (P－3C)	12	142,067	0	142,067	11,839
(18) (2) 救難飛行艇(US－1A)	1	5,959	47	5,912	
(19) (3) 初級操縦練習機(KM－2改)	1	374	23	350	
(20) (4) 計器飛行練習機 (TC－90)	1	654	85	569	
(21) (5) 対潜ヘリコプター (HSS－2B)	15	35,011	227	34,785	2,334
(22) (6) 掃海ヘリコプター (MH－53E)	4	22,671	174	22,497	5,668
(15) 小計	34	206,736	556	206,180	
(23) 航空自衛隊					
(24) (1) 戦闘機 (F－15)	18	195,689	237	195,451	10,872
(25) (2) 輸送機 (C－130H)	2	13,059	144	12,915	6,529
(26) (3) 中等練習機 (T－4)	15	44,531	2,591	41,940	2,969
(27) (4) 輸送ヘリコプター(CH－47)	3	17,926	0	17,926	5,975
(28) (5) 救難ヘリコプター (V－107A)	5	5,576	0	5,576	1,115
(15) 小計	43	276,780	2,972	273,808	
(29) 合計	116	545,146	3,634	541,512	

Key:

1. (Unit: 1 million yen)
2. Category
3. Number of planes (A)
4. Amount (B)
5. Proposed Budget for FY86
6. Amount for future fiscal years
7. Remarks
8. 3. Airplanes
9. Average price (B)/(A)
10. Ground Self-Defense Force
11. (1) Antitank helicopters (AH-15)
12. (2) Observation helicopters (OH-6D)
13. (3) Multiple-use helicopters(HU-1H)
14. (4) Transport helicopters (CH-47)
15. Subtotal
16. Maritime Self-Defense Force
17. (1) Antisubmarine patrol planes
18. (2) Rescue boats (US-1A)
19. (3) Student training planes (KM-2--new model)
20. (4) Instrument training plane (TC-90)
21. (5) Antitank helicopters (HSS-2B)
22. (6) Minesweeping helicopters
23. Air Self-Defense Force
24. (1) Fighter planes (F-15)
25. (2) Transport planes (C-130H)
26. (3) Midlevel training planes (T-4)
27. (4) Transport helicopters (CH-47)
28. (5) Rescue helicopters (V-107A)
29. Total

Table 5 continued

(1)(単位：百万円)

(2)区分	(3)数量(トン数)(A)	(4)総額(B)	(19)61年度概算要求額	(5)後年度負担額	(6)備考
(7)4 艦船					[平均価格(B)/(A)] (34)
(8)(艦艇)					
(9)(1)甲型警備艦(DD)	1 (3,400t)	51,308	39	51,270	
(10)(2)乙型警備艦(DE)	2 (3,800t)	58,594	664	57,930	29,297
(11)(3)潜水艦(SS)	1 (2,400t)	44,573	168	44,406	
(12)(4)中型掃海艇(MSC)	3 (1,320t)	14,696	22	14,674	4,899
(13)(5)輸送艇(LCU)	1 (420t)	1,769	9	1,760	
(14)(6)訓練支援艦(ATS)	1 (2,200t)	15,095	40	15,054	
(15)(7)補給艦(AOE)	1 (8,300t)	25,309	309	25,000	
(16)小計	10 (21,840t)	211,344	1,249	210,094	
(17)(支援艦)	7 (1,612t)	1,652	898	754	
(18)合計	17 (23,452t)	212,995	2,147	210,848	

(1)(単位：百万円)

(2)区分	(19)61年度概算要求額	(20)60年度予算額	(6)備考
(21)Ⅱ 弾薬の確保	(154,153) 121,098	(140,015) 103,630	
(22)Ⅲ 新自動警戒管制組織の整備	(3,663) 50,555	(5,740) 39,397	
(23)Ⅳ 自衛官の充足率			
(24)陸上自衛隊	86.73%	86.33%	
(25)海上自衛隊	96.0 %	96.0 %	
(26)航空自衛隊	96.0 %	96.0 %	
(27)Ⅴ 教育訓練の推進	(266,680) 440,147	(211,075) 401,875	
(28)1 教育訓練費	(52,083) 43,706	(25,819) 46,138	教育訓練器材、訓練演習等の経費 (29)
(30)2 油購入費	78,003	74,769	
(31)3 装備品修理費	(214,597) 318,438	(185,256) 280,968	航空機・艦船・武器等の維持修理等経費 (32)

(33)注：上段( )内は、新規国庫債務負担行為の後年度負担額である（以下同じ）。

Key:

1. (Unit: 1 million yen)
2. Category
3. Number of ships (tonnage) (A)
4. Total amount (B)
5. Amount for future fiscal years
6. Remarks
7. 4. Warships and vessels
8. (Naval vessels)
9. (1) 1st class patrol boat (DD)
10. (2) 2d class patrol boats (DE)
11. (3) Submarine (SS)
12. (4) Middle class minesweepers (MSC)
13. (5) Transport boats (LCU)
14. (6) Training support ships (ATS)
15. (7) Supply ships (AOE)
16. Subtotal
17. (Support boats)
18. Total
19. Proposed budget for FY86
20. FY 85 budget
21. II. Securing ammunition
22. III. Improvement of a new automatic warning control system
23. IV. Adequacy of the number of self-defense officials
24. Ground Self-Defense Force
25. Maritime Self-Defense Force
26. Air Self-Defense Force
27. V. Promotion of educ. and training
28. 1. Education and training expenses
29. Costs of education and training equipment, and training
30. 2. Oil procurement costs
31. 3. Equipment repair costs
32. Costs of maintaining and repairing airplanes, ships, and weapons
33. Note: Figures in ( ) above refer to amount of new contract authorization to be carried in future years. (This is the same in subsequent tables.)
34. Average price (B)/(A)

Table 5 continued

(単位：百万円)

(1)	(2) 区分	(3) 61年度概算要求額	(4) 60年度予算額	(5) 備考
(6)	Ⅵ 防衛施設の整備	(26,222) 65,685	(22,279) 44,237	
(7)	1 事業関連施設	(17,128) 35,924	(14,865) 27,180	飛行場、弾薬庫、港湾関連施設等 (8)
(9)	2 生活関連施設	(4,944) 14,199	(3,377) 7,210	隊舎、国設宿舎等 (10)
(11)	3 環境保全施設	798	(354) 323	汚水処理施設等 (12)
(13)	4 後方支援施設	(4,150) 14,764	(3,683) 9,524	教育、通信、補給施設等 (14)
(15)	Ⅶ 隊員施策	(5,792) 79,401	(4,671) 67,943	
(16)	1 営舎費等	(271) 32,707	(220) 32,052	営舎用備品、燃料費、光熱水料等の維持経費 (17)
(18)	2 生活環境の整備	(4,944) 22,234	(3,377) 14,840	
(19)	(1) 隊舎等	(4,944) 10,211	(3,377) 4,420	施設の新設、増設、改修等の経費 (20)
				(21) ア 隊舎 14箇所 → 35箇所
				(22) イ 食堂・浴場 3箇所 → 7箇所
				(23) ウ 体育館・プール・保健施設 5箇所 → 9箇所
				(24) エ ボイラーの改装 3箇所 → 5箇所
	(25) (2) 公務員宿舎	12,022	10,420	宿舎新設 (26)
				庁舎 232戸→318戸 (27)
				特借 498戸→460戸 (28)
				計 730戸→778戸 (29)
	(30) 3 就職援護	1,214	1,047	技能訓練、業務管理講習等の就職援護経費 (31)
	(32) 4 衛生施策の整備	(578) 23,217	(1,078) 20,003	
	(33) (1) 医療施設の整備	(578) 2,130	(1,078) 415	横須賀地区病院施設の整備等 (34)
	(35) (2) 医療費	21,087	19,588	医療費、診療委託費 (36)

Key:

1. (Unit: 1 mil. yen)
2. Category
3. Proposed budget for FY86
4. FY85
5. Remarks
6. VI. Improvement of defense facilities
7. 1. Operations-related facilities
8. Airports, munitions warehouses, port facilities
9. 2. Housing
10. Troop quarters, government-furnished housing
11. 3. environmental protection facilities
12. Sewage treatment facilities
13. 4. Rear support facilities
14. Education, communication and supply facilities
15. VII. Troop policies
16. 1. Barracks expenses
17. Expenses for equipment for barracks, fuel costs, and light, heat and water costs
18. 2. Improvement of living conditions
19. (1) Troop quarters
20. Expenses for construction of new facilities, and enlargement and renovation of facilities
21. a) Troop quarters: increase from 14 to 35
22. b) Dining facilities, baths: increase from 3 to 7
23. c) Gyms, pools, health facilities: increase from 5 to 9
24. d) Replacement of boilers: 3 to 5
25. (2) Government employees' housing
26. New construction of housing facilities
27. Government facilities: from 232 to 318
28. Special lease facil.: from 498 to 460
29. Total 730 to 778
30. 3. Employment protection
31. Various employment protection exp., such as teaching skills and management
32. 4. Promotion of satellite policies
33. (1) Improvement of medical facilities
34. Improvement of Yokosuka hosp. facility
35. (2) Medical costs
36. Medical costs, and examination and treatment commission

Table 5 continued

(1) (単位：百万円)

(2) 区分	(3) 61年度概算要求額	(4) 60年度予算額	(5) 備考
(6) Ⅷ 研究開発の推進	(49,915) 66,307	(27,081) 57,819	
(7) 1 人件費	6,246	6,050	
(8) 2 研究開発経費等	(49,915) 60,261	(27,081) 51,769	

(9) 主要内訳

(2) 区分	(3) 61年度概算要求額	(4) 60年度予算額
(10) 誘導武器関係	(16,679) 5,366	(4,384) 9,689)
(11) 電子機器関係	(6,745) 12,124	(9,116) 6,447
(12) 火器・車両関係	(12,403) 5,226	(1,775) 8,254
(13) 艦艇・水中武器関係	(2,955) 4,288	(3,213) 1,245
(14) 航空機関係	(7,107) 21,155	(7,896) 14,725

(15) (参考)

(2) 区分	(3) 61年度概算要求額	(4) 60年度予算額	(5) 備考
(16) 防衛関係費	33,568	31,371	
(17) 対前年度伸率	7.0	6.9	
(18) 人件・糧食費	14,490	14,140	
(19) 対前年度伸率	2.5	8.0	
(20) 物件費	19,077	17,232	
(21) 対前年度伸率	10.7	6.0	
(22) 歳出化経費	11,837	10,735	
(23) 一般物件費	7,240	6,497	
(24) 正面	7,911	7,224	
(25) 後方	11,166	10,008	

Key:

1. (Unit: 1 million yen)
2. Category
3. Proposed budget for FY86
4. FY85
5. Remarks
6. VIII. Promotion of research and development
7. 1. Personnel expenses
8. 2. Research and development costs
9. Major breakdown
10. Guided weapons-related research
11. Electronic equipment-related research
12. Firearms, vehicle-related research
13. Warships, underwater weapon-related research
14. Airplane-related research
15. (Reference)
16. Defense-related research
17. Increase over previous fiscal year
18. Personnel and food expenses
19. Increase over previous fiscal year
20. Supply costs
21. Increase over previous fiscal year
22. Annual expenditure
23. General supply costs
24. Operational
25. Support

Table 6. Itemized Breakdown of Defense-Related Expenses

防衛関係費の費目別内訳

(1) (単位：億円・%)

(2)区分	(3)昭和60年度予算 金(4)額	構成比(5)	昭和61年度概算要求 金(4)額	構成比(5)
(6)人件・糧食費	14,140	45.1	14,490	43.2
(7)物件費	17,232	54.9	19,077	56.8
(8)装備品購入費	8,221	26.2	9,227	27.5
(9)研究開発費	504	1.6	592	1.8
(10)施設整備費	442	1.4	657	2.0
(11)維持費等	4,722	15.1	5,135	15.3
(12)基地対策費	2,965	9.5	3,069	9.1
(13)その他	377	1.2	397	1.2
(14)合計	31,371	100.0	33,568	100.0

(15)注：1 装備品購入費：武器車両等購入費、航空機購入費、艦船建造費
(16) 2 維持費等：教育訓練費、油購入費、装備品等整備諸費等
(17) 3 基地対策費：基地周辺整備、提供施設の整備、基地従業員対策、提供施設整備諸費等

Key:

1. (Unit: 100 million yen, percent)
2. Category
3. FY85 budget
4. Amount
5. Component ratio
6. Personnel and food expenses
7. Supply costs
8. Equipment procurement costs
9. Research and development costs
10. Facilities improvement costs
11. Maintenance costs
12. Military base costs
13. Other
14. Total
15. Note: 1. Equipment procurement costs: procurement of weapons and vehicles, procurement of airplanes, building of warships
16. 2. Maintenance costs: education and training costs, oil procurement costs, equipment maintenance costs
17. 3. Military base costs: cost of improving base environs and provided facilities, and measures concerning base employees

Table 7. Amount and Percentage of Personnel, Food, Operational and Support Expenses Budgeted for each of the three Self-Defense Forces

陸・海・空3自衛隊予算の人・糧、正面、後方の額と割合 (単位：億円・%) (1)

(2)機関別	(3)区分	(4)60年度予算額	61年度 (5)概算要求額 (6)	(7)対前年度増△減額	(8)構成比
(9)陸上自衛隊	人件・糧食費 (10)	8,503	8,587	84	69.8
	正面 (11)	1,802	2,215	444	18.2
	後方 (12)	1,307	1,479	172	12.0
	計 (13)	11,612	12,311	699	100.0
(14)海上自衛隊	人件・糧食費 (10)	2,589	2,714	125	33.7
	正面 (11)	2,784	3,194	410	39.7
	後方 (12)	1,960	2,139	179	26.6
	計 (13)	7,333	8,047	715	100.0
(15)航空自衛隊	人件・糧食費 (10)	2,558	2,691	133	30.4
	正面 (11)	2,638	2,471	△ 166	27.9
	後方 (12)	3,080	3,685	605	41.7
	計 (13)	8,275	8,848	573	100.0

Key:

1. (Unit: 100 million yen, percent)
2. Organization
3. Category
4. FY85 budget
5. FY86
6. Proposed budget
7. Increase (△ decrease) over the previous fiscal year
8. Component ratio
9. Ground Self-Defense Force
10. Personnel and food costs
11. Operational
12. Support
13. Total
14. Maritime Self-Defense Force
15. Air Self-Defense Force

Table 8. Contract Authorization and Continuing Expenses: Comparison with the Previous Fiscal Year

国庫債務負担行為・継続費の対前年度比較 (1)(単位：億円・%)

(2)区分	(3)60年度予算額	61年度 (5)概算要求額 (6)	(7)対前年度増△減額	(8)伸率
(8)国庫債務負担行為 (新規分)	12,549	17,113	4,564	36.4
(9)防衛本庁	11,978	16,489	4,511	37.7
(10)防衛施設庁	571	624	53	9.2
(11)後年度負担額	23,058	28,035	4,977	21.6
(9)防衛本庁	22,601	27,536	4,935	21.8
(10)防衛施設庁	457	199	42	9.2

Key:

1. (Unit: 100 million yen, percent)
2. Category
3. FY85 budget
4. FY86
5. Proposed budget
6. Increase (△decrease) over the previous fiscal year
7. Percent of increase
8. Total amount (new portion)
9. Defense Agency Headquarters
10. Defense Facilities Administration Agency
11. Amount for future fiscal years

Summary of Proposed FY86 Budget: Defense Facilities Administration Agency

The proposed FY86 budget for the Defense Facilities Administration Agency is Y333,188,000,000 for budget expenditures, and Y62,394,000,000 for contract authorization. This budget proposal was submitted to the Ministry of Finance on 31 August.

This is an increase of Y10,831,000,000 (3.4 percent) over the previous fiscal year's budget of Y322,357,000,000.

Military base expenses are Y306,933,000,000, an increase of Y10,451,000,000 (3.5 percent) over the Y296,482,000,000 yen budgeted for last fiscal year.

The following is an outline of the FY86 budget proposal.

1. As far as the work on base environs, emphasis will be placed on helping with soundproofing of living quarters. We will try to improve the living environment on the bases.

In particular, it is necessary to actively work to soundproof living quarters, so for FY86 we are requesting an increase of Y56,425,000,000 (6.5 percent) over the previous fiscal year.

On the other hand, bearing in mind the present austere fiscal situation, we will do our best to limit expenses. In particular, with regard to helping with welfare administration facilities, and subsidies for improving the environment, we will go along with the report of the ad hoc council on administrative adjustment, and will try to keep the total amount under last fiscal year's amount.

2. In order to contribute to the smooth management of the Japan-U.S. security system, we will promote the improvement of facilities provided for the U.S. Forces in Japan.

3. We are requesting the amount required for compensation costs, such as for base employees and for facilities provided.

Table 9. 1. Proposed expenditures

1 歳 出 予 算 (1)

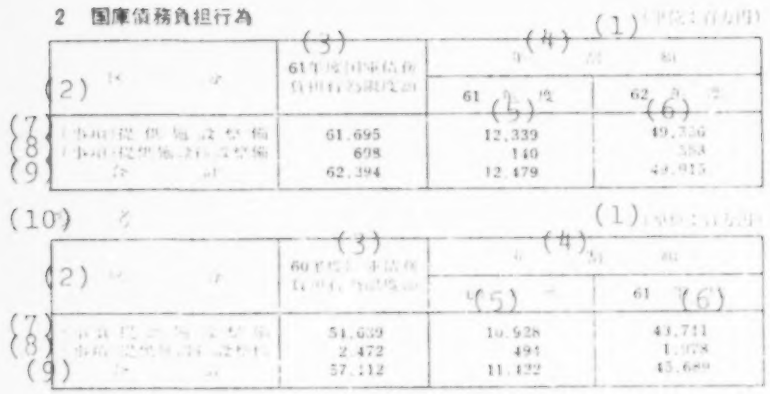
(2) 区 分	(3) 61 年 度 当初歳出額	(4) 60 年 度 予 算 額	(5) 対前年度 増 △ 減 額	(6) 対前年度 伸 率
(7) (組織)				
(8) 防 衛 施 設 庁				
(9) (項)防 衛 施 設 庁	22,909	22,519	389	1.7
(10) (項)調達業務管理費	21,229	22,042	△ 813	△ 3.7
(11) (項)施設等整備費	(49,356) 284,977	(43,711) 271,323	(5,645) 13,653	5.0
(12) (項)提供施設等借料	(558) 3,927	(1,978) 6,326	(△ 1,420) △ 2,399	△ 37.9
(13) (項)相互防衛援助協定等交付金	146	146	0	0.0
(14) 合 計	(49,915) 333,188	(45,689) 322,557	(4,225) 10,631	3.4

(15) (16) (17) (18) 注: 1 上段( )内は、国庫債務負担行為の後年度負担額である。(以下同じ)
2 予算額は、当初予算である。(以下同じ)。
3 計数は、四捨五入によっているので符合しないことがある。(以下同じ)。
4 伸率は、千数点2位を四捨五入した。(以下同じ)。

Key:

1. (Unit: 1 million yen)
2. Items
3. Proposed budget for FY86
4. FY85
5. Increase (▲ decrease) over the previous fiscal year
6. Percent increase over the previous fiscal year
7. (Organization)
8. Defense Facilities Administration Agency
9. (Item) Defense Facilities Administration Agency
10. (Item) Cost of managing procurement work
11. (Item) Facilities management-related expenses
12. (Item) Cost of renovating provided facilities
13. (Item) Joint defense aid agreement subsidy
14. Total
15. Note: 1. The figure in ( ) above is the amount of contract authorization for future fiscal years.
16. 2. The budget amount is the original budget (This is also true in subsequent charts).
17. 3. The figures are rounded off, so sometimes the totals do not add up (This is also tru in subsequent charts).
18. 4. The percent is rounded off to the nearest 10 (This is also true in subsequent charts).

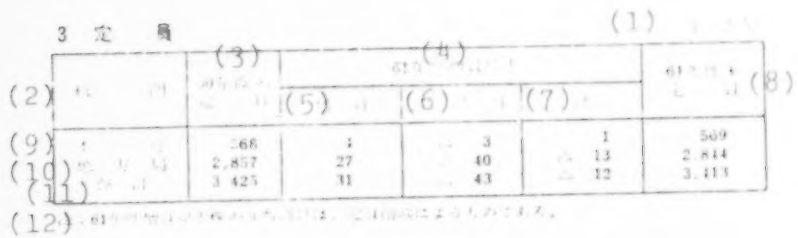
Table 10. 2. Contract Authorization



Key:

1. (Unit: 1 million yen)
2. Category
3. FY86 contract authorization ceiling
4. Amount by year
5. FY86
6. FY87
7. (Item) Improvement of provided facilities
8. (Item) Improvement and renovation of provided facilities
9. Total
10. Reference

Table 11. 3. Personnel



Key:

1. (Unit: person)
2. Organization
3. Personnel at end of FY85
4. Requested increase of personnel for FY86
5. Increase
6. Decrease
7. Total
8. Personnel at the end of FY86
9. Headquarters
10. Branch offices
11. Total
12. Note: The "decrease" column under the "Requested Increase of Personnel for FY86" column represents a decrease in the number of personnel.

Table 12. 4. Military Base Expenses

4 基地対策経費

(1)(単位：百万円%)

(2) 事項	(3) 61年度 概算要求額	(4) 60年度 予算額	(5) 対前年度 増△減額	(6) 対前年度 伸率
(7) 1 基地周辺整備等諸施策の推進	150,924	147,597	3,327	2.3
(8) (1) 障害防止事業	20,148	20,001	146	0.7
(9) (2) 騒音防止事業	80,388	77,287	3,100	4.0
(10) (うち、住宅防音)	56,425	52,974	3,452	6.5
(11) (3) 民生安定助成事業	22,767	23,464	△ 698	△ 3.0
(12) (4) 道路改修事業	9,489	9,159	330	3.6
(13) (5) 周辺整備調整交付金	11,173	10,672	501	4.7
(14) (6) 移転措置事業	6,015	6,086	△ 72	△ 1.2
(15) (7) 緑地整備事業	790	790	0	0.0
(16) (8) 施設周辺の補償	155	136	19	13.8
(17) 2 提供施設の整備	(49,356) 65,150	(43,711) 61,370	(5,645) 3,780	6.2
(18) 3 補償経費等の充実	68,902	62,356	6,546	10.5
(19) (1) 施設の借料	60,957	55,055	5,902	10.7
(20) (2) 漁業補償	3,948	3,738	210	5.6
(21) (3) その他の補償等	3,998	3,564	434	12.2
(22) 計	(49,356) 284,977	(43,711) 271,323	(5,645) 13,653	5.0
(23) 4 基地従業員対策の強化	18,029	18,833	△ 804	△ 4.3
(24) (1) 離職者対策	557	783	△ 226	△ 28.9
(25) (2) 福祉対策	9,447	8,776	671	7.7
(26) (3) 従業員対策	8,025	9,274	△ 1,249	△ 13.5
(27) 5 提供施設の移設	(558) 3,927	(1,978) 6,326	(△ 1,420) △ 2,399	△ 37.9
(28) 合計	(49,915) 306,933	(45,689) 296,482	(4,225) 10,451	3.5

Key:

1. (Unit: 1 million yen, percent)
2. Item
3. Proposed budget for FY86
4. FY85
5. Increase (△ decrease) over the previous fiscal year
6. Percent increase over previous fiscal year
7. 1. Promotion of policies such as improvement of base environs
8. (1) Problem-prevention operations
9. (2) Noise-prevention operations
10. (of this, for soundproofing housing)
11. (3) Public welfare operations
12. (4) Road improvement operations
13. (5) Subsidy to improve surroundings
14. (6) Transfer operations
15. (7) Improvement of green areas
16. (8) Compensation for facility areas
17. 2. Improvement of provided facilities
18. 3. Fulfillment of compensation expenses
19. (1) Rent of facilities
20. (2) Fishing compensation
21. (3) Other compensations
22. Total
23. 4. Strengthening of measures for base employees
24. (1) Measures for those who leave their jobs
25. (2) Welfare measures
26. (3) Employee measures
27. 5. Renovation of provided facilities
28. Total

Table 13. 5. Changes in the Defense Facilities Administration Agency Budget

5 防衛施設庁予算の推移 (1) (単位：百万円)

(2) 科目	57年度 (3) 予算額	伸率 (8) %	58年度 (4) 予算額	伸率 (8) %	59年度 (5) 予算額	伸率 (8) %	60年度 (6) 予算額	伸率 (8) %	61年度 (7) 概算要求額	伸率 (8) %
(9) (組織)防衛施設庁										
(10) (項)防衛施設庁	20,917	5.7	20,671	△ 1.2	21,686	4.9	22,319	2.9	22,509	1.7
(11) (項)調達業務管理費	18,776	3.4	19,214	2.3	20,487	6.6	22,042	7.6	21,229	△ 3.7
(12) (項)施設提供等円滑化対策経費	(23,983) 240,263	8.1	(36,742) 249,054	3.7	(41,672) 256,721	3.1	(43,711) 271,323	4.9	(49,256) 284,977	5.0
(13) (項)施設提供等施設整備費	(2,431) 12,442	△ 6.7	(4,877) 9,421	△24.3	(3,128) 9,411	△ 0.1	(1,976) 6,326	△32.8	(526) 3,927	△37.9
(14) (項)日米共同訓練移転等交付金	132	1.5	135	2.3	142	5.2	146	2.7	146	0.0
(15) 合計	(26,414) 292,650	6.9	(33,719) 298,679	2.0	(47,009) 310,647	4.0	(45,689) 322,357	3.8	(49,912) 333,188	3.4

Key:

1. (Unit: 1 million yen)
2. Item
3. FY82 budget
4. FY83 budget
5. FY84 budget
6. FY85 budget
7. FY86 budget
8. Percent increase
9. (Organization) Defense Facilities Administration Agency
10. (Item) Defense Facilities Administration Agency
11. (Item) Management of procurement work
12. (Item) Facilities management-related expenses
13. (Item) Renovation and improvement of provided facilities
14. (Item) Joint defense aid cooperation subsidy
15. Total

Table 14. 6. Transfer of Military Base Expenses

6 基地対策経費の推移

(1) (単位：百万円)

(2) 事項	57年度予算額	(3) 伸率 (8) %	58年度予算額	(4) 伸率 (8) %	59年度予算額	(5) 伸率 (8) %	60年度予算額	(6) 伸率 (8) %	61年度概算要求額	(7) 伸率 (8) %
(9) 1 基地周辺対策等の施策の推進	144,990	1.9	145,398	0.3	146,826	1.0	147,597	0.5	150,924	2.3
(10) (1)防音防止事業	19,040	7.8	19,138	0.5	20,001	4.5	20,001	0.0	20,148	0.7
(11) (2)騒音防止事業	70,641	6.1	72,225	2.2	74,967	3.8	77,287	3.1	80,388	4.0
(12) (うち、住宅防音)	43,611	6.2	47,206	8.2	50,224	6.4	52,974	5.5	56,425	6.5
(13) (3)民生安定助成事業	26,655	0.0	25,870	△ 2.9	24,690	△ 4.6	23,164	△ 5.0	22,767	△ 3.0
(14) (4)道路改修事業	8,985	0.7	8,874	△ 1.2	9,085	2.4	9,159	0.8	9,489	3.6
(15) (5)周辺整備調整交付金	10,672	0.0	10,672	0.0	10,672	0.0	10,672	0.0	11,173	4.7
(16) (6)移転補償事業	8,119	△25.5	7,666	△ 5.7	6,719	△14.8	6,686	△ 0.6	6,015	△11.2
(17) (7)緑地整備事業	780	△ 7.6	779	△ 0.9	790	1.5	790	0.0	790	0.0
(18) (8)特定防衛施設周辺の整備	104	△ 1.9	185	77.7	100	△45.9	136	35.8	155	13.8
	(22,963)		(30,342)		(41,872)		(43,711)		(49,356)	
(19) 2 提供施設の整備	35,182	27.3	43,912	24.8	51,334	16.9	61,370	19.5	65,150	6.2
(20) 3 補償経費等の負担	69,111	14.8	69,724	△ 1.1	70,361	1.4	72,356	3.0	78,902	10.5
(21) (1)施設の借料	51,293	10.3	51,100	△ 0.4	52,765	3.3	55,055	4.3	60,957	10.7
(22) (2)漁業補償	2,904	2.7	3,222	10.9	3,420	6.1	3,738	9.3	3,948	5.6
(23) (3)その他の補償等	6,214	90.0	5,402	△13.1	4,376	△19.0	3,564	△18.6	3,998	12.2
	(21,583)		(30,342)		(41,872)		(43,711)		(49,356)	
(24) 計	240,583	8.1	249,034	3.5	258,721	3.9	271,323	4.9	284,977	5.0
(25) 4 基地従業員対策の強化	15,885	2.7	16,237	2.2	17,416	7.3	18,833	8.1	18,029	△ 4.3
(26) (1)離職者対策	531	△11.7	523	△ 1.5	665	27.3	783	17.7	557	△28.9
(27) (2)福祉対策	8,114	6.0	8,178	0.8	8,408	2.8	8,776	4.4	9,447	7.7
(28) (3)従業員対策	7,240	0.4	7,536	4.1	8,344	10.7	9,274	11.2	8,025	△13.5
	(2,431)		(4,877)		(5,138)		(1,976)		(556)	
(29) 5 提供施設の整備	12,442	△ 6.7	9,421	△24.3	9,111	△ 0.1	6,326	△30.6	3,927	△37.9
	(26,414)		(35,219)		(47,009)		(45,689)		(49,915)	
(30) 合 計	268,910	7.0	274,692	2.2	285,549	4.0	296,782	3.8	306,933	3.5

Key:
1. (Unit: 1 mil. yen)
2. Item
3. FY82 budget
4. FY83 budget
5. FY84 budget
6. FY85 budget
7. FY86 budget
8. Percent increase
9. 1. Promotion of measures such as improving base environs
10. (1) Problem-prevention operations
11. (2) Noise-prevention operations
12. (of this, for soundproofing housing
13. (3) Public welfare operations
14. (4) Road improvement operations
15. (5) Subsidy to improve the environs
16. (6) Transfer operations
17. (7) Improvement of green areas
18. (8) Compensation for facility areas
19. 2. Improvement of provided facilities
20. 3. Meeting compensation expenses
21. (1) Rent of facilities
22. (2) Fishing compensation
23. (3) Other compensations
24. Total
25. 4. Strengthening of measures for base employees
26. (1) Measures for those who leave their jobs
27. (2) Welfare measures
28. (3) Employee measures
29. 5. Renovation of provided facilities
30. Total

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ECONOMIC

MITI'S SIX IMPORTANT PROJECTS FOR 1986 REPORTED

Tokyo JIHYO in Japanese Dec 1985 pp 86-90

[Summary of Lecture by Deputy Vice Minister Koji Kodama]

[Text] MITI's priority programs for the new fiscal year are drawing attention from various sectors. The ministry has established priorities for FY86, which are characterized by ranking the "Internationalization of A New Dimension" as the top policy. In concert with Deputy Vice Minister Kodama's clear and pleasant tone of speech, the atmosphere of the study meeting was uplifting, and the participants were charged with enthusiasm. It turned out to be a lecture full of clues to tell the fortune of next year's Japanese economy. (The 18th Toraken Lecture Meeting, 16 October)

"Plane" Internationalization

MITI every year established some programs as priorities for the new fiscal year, and six such were chosen for FY86.

"Internationalization of A New Dimension"--This goal was incorporated in the priority programs every time the international economy has boomed in the past, but this is the first time that internationalization was brought to the top of the list.

What is the new dimension?

Internationalization in the decade starting from 1955 meant the liberalization of trade while the liberalization of capital transactions was the theme in the decade starting from 1965. Toward the end of that decade, an open system including strategic industries was established.

These internationalization steps were "beach tactics." In those days, the beach blockade against the entries of materials and money into Japan was opened.

Entering the decade starting from 1975, the internationalization demand changed in quality, taking into consideration the stabilized surplus of the

trade balance and the ordinary balance. The "Foreign Pressure Accommodation" type internationalization was no longer enough to do the job.

The "linear" beach tactics had to be supplanted by "plane" internationalization that penetrates wide and deep into the entire Japanese economy. When trying to do something, for instance, internal economic management and industrial policies, the international effect must always be considered. Or, we now have to think of assuming a positive role, reminding ourselves of the position of Japan in the world.

That's what is meant by the new dimension. "Internationalization" is an old well worn word, but we will dust it off and promote the internationalization of a new dimension.

Focusing on Tokyo Summit

What are we supposed to do specifically?

First and foremost in importance is to adopt completely different principles of logic. Perpetually we have stressed policies that would enhance the international competitive power of Japanese industries. From now on, we must switch to a new approach that stresses how Japan should properly act in the global community.

This need led to the creation of a private advisory agency of vice-ministers, "Investigation For Japan In The World," in English translation, "Japan in the Global Community." Why have we bothered to give it an English title? Well, 10 out of 26 members of this group are foreigners.

This is a first attempt by the government sector. In the past, there were cases where other ministries temporarily invited foreigners to ask their opinions at councils and investigations, but there were no precedents of assigning regular foreign members to them.

People from the United States, France, China, Korea, Indonesia, etc., were asked to join these groups. Since it is not possible for us to ask them to come over to Japan everytime a meeting is held, practically all of them were picked from those residing in Japan, except for Koreans and some other members who will visit Japan as the need arises.

The profiles of Japanese members are also untraditional. We picked comparatively young people with fresh opinions from wide range of various fields. We asked them to present us with a report of their opinions, from a broader point of view, on how Japan can contribute to the international society and what should be the mission of Japan.

Usually, councils and advisory agencies of government offices will reflect the rationale of government offices. However, this investigative group will be totally independent. It is our objective to have all members freely express their opinions and make them useful in exploring the direction of MITI's policies.

The other project was assigned to the Industrial Structure Council, which would investigate the qualitative improvement of the industrial structure and a new policy style for actual development of MITI's policies in line with the orientation of the new policies.

The results were due in this fiscal year. However, under current conditions, the council will not be able to finalize them in time, and it is rescheduled to have an interim report ready by around March of next year.

A Tokyo summit will be held in May 8 next year. MITI wishes to draw its conclusions in tandem with the content and timing of the summit.

With the Internationalization of a new dimension, it is said that the key is the switch from an export oriented to a domestic oriented setup. Traditional measures for expansion of domestic demand are public works. However, we do not have a free hand to give generous financing for implementation of public works as we are in the process of fiscal rebuilding. Government's basic approach is to seek a method to boost public works without issuing any extra national bonds.

Use of Private Vitality

Therefore, an idea was conceived to utilize private vitality.

There are two major streams of thoughts in the government sector. One asks if large-scale projects central to the Ministry of Construction can be implemented by private undertakings without spending government's money. A road over the Tokyo Bay and the Akaishi Bridge building belong in this category. Works will be distributed under the license system. Licensed contractors execute works after procuring capital. Upon completion and independent management of roads and bridges, the assets will be turned over to the government at the point of time when debts are cleared. The key point of this process is the capital procurement. Government is thinking of supporting, for instance, issuance of tax-free bonds.

On the other hand, the private vitality utilization proposal considered by MITI relates to the promotion of construction of new industry-related social facilities. For example, establishment of research and development and international exchange foundations falls into this category. In terms of the international exchange, trade fair sites in Japan are embarrasingly poor compared to American and European types. These will be upgraded to an international level. In terms of research and development, construction of research zones and venture business zones are suggested.

In addition to these, is the idea of building facilities for leisure. Even better we should create "silver" zones which concentrate working facilities for middle and old aged people.

Prefectural level governments made plans to utilize private vitality for local promotion along these lines. Already over a 100 plans have been

presented to MITI. Nearly 100 of them are ready for announcement. While large ones are a 100 billion class projects, an average project is probably on a "grass roots" scale.

Despite that, the aggregate total amount to ¥1.1 trillion, and ¥5.5 trillion when related works of ¥4.4 trillion are added. It is a 5-year plan. MITI will subsidize the master planning of these projects. Also, the ministry aids the main contractors (the third sector) with the capital procurement. Capital subscription from the industrial investment account, loans from government financing agencies and also supportive tax measures are considered.

Proposals for these will not wait till the next fiscal year, but are deliberated for presentation at this year's extra session of the Diet.

Another concrete project of the "Internationalization of A New Dimension" refers to promotion of imports.

Promotion of Grass Roots Bazaars

In the past, MITI rewarded businesses which contributed to exports. Now, we must think of the import/export balance.

Financing by the Export-Import Bank of Japan and Japan Development Bank must be given considering the imbalance with imports. The same principle applies to JETRO's activities. In the tax system, we would like to create an entry for the product import reserve fund.

Every year in October, colorful events are held celebrating "Import Promotion Month." This year, we will specially designate 2 months, October and November, to promote nationwide import bazaars. This is also what should be called a "grass roots bazaar," and we have earmarked 1,100 cases, counting all local events.

Next step is the international technology exchange.

To set the stage to establish an international exchange of engineers as well as to promote technology transfer to developing nations, we will increase examples of joint development of industrial technology. Also, as a stage for promotion of technology exchange, we will study the feasibility of establishing an International High Tech Organization (an interim name). This organization will be given a graduate school faculty, and also the authority to confer a doctor's degree.

Even under the fiscal rebuilding status, the budget for economic cooperation with developing nations will be able to expect an increment. During 1980-85, an ODA (Official Development Association) budget doubling plan was charted. In the ensuing 7 years from 1985-91, the budget will further double that doubled amount.

With this decision, the ODA for the 7 years to 1991 will reach $40 billion. We hope to undertake works including large size projects useful for the

economic development of developing nations. For example, in ASEAN nations, developmental assistance will be promoted together with technological assistance--development of local energy systems paired with the development of automatic translation systems. Naturally, we hope to get cooperation from the private sector in this area.

Institution of Basic Technology Center

The second priority program related to the promotion of technology development and information dissemination. This item was on top of the intersecting programs in FY85, and it still remains a key program in the next fiscal year.

(1) The activities of the "Basic Technology Research Promotion Center" instituted in October will be put on a full track next year. The purpose of the center is to backup basic and applied technology development by the private sector through capital subscriptions and financing in accordance with the magnitute of a risk. The center operations are jointly managed with the Ministry of Postal Services.

For this fiscal year, the center started collecting capital subscription of ¥10 billion from the industrial investment account, ¥3 billion from Export-Import Bank of Japan and ¥5 billion from the private sector. The center plans to upgrade the total operations to the ¥33.5 billion scale next year.

(2) Technology development for aircraft, jet engines and space development will be promoted.

In aircraft, the research advanced from the YS 11 to the YX and further to the YXX. The YXX is a medium distance passenger jet transport with a 150 passenger capacity, and is forecasted to be developed by 1990's.

Jet engine research requires astronomical capital. Initially, Japan promoted a joint research project with Rolls-Royce, but found that the joint effort by the two countries, Japan and Britain, could not raise enough capital. Subsequently, the United States, Italy and Germany joined the group.

Even so, it is a real money-hungry research and development project. Japan cannot afford to practice the traditional general system of offering subsidies to the private sector.

Therefore, we will create an international aircraft joint development fund and start the project by the multilateral financing form--a capital subscription from the industrial investment account, a subsidy from general account, a capital subscription from Japan Development Bank and a capital subscription from the private sector. Thereafter, the scale will be enlarged by the so called "revolving fund" system. It is the system where the redemption by income of the government subsidy portion will be transferred untouched to the fund.

In the space related field, we will try the free flyer research. This research field is actively pursued in the United States, and it will involve

experimental manufacture of new materials under weightless conditions. We will launch an unmanned laboratory in space with a target date of 1990.

In the bio-related area, we aim to analyze precise protein functions, clarify protein structures and synthesize a protein having required functions.

Free and Daring Maneuvers

The industrial ownership problem is a theme that affects both technology development and information dissemination.

Whether or not the patent system can be managed smoothly in the high-tech age will have a large impact on the high tech research and development. Consequently, directors of patent offices in Japan, the United States and EC nations hold multiple "patent summit" sessions every year to exchange information.

We will try to make "summit" arrangements as detailed as possible to organize a system in each country in order to expedite the data processing for speedy exchange of essential data and patent materials.

The future point of information dissemination is people problem. There is shortage of professional human resources for processing information. Unless we start now to foster professionals, we will not be able to meet our needs.

In view of that, we will make an arrangement with the Ministry of Education, for example, to integrate a curriculum for computer utilization in the schools. We would also like to develop a model education system to foster information processing engineers.

Data base organization is also important. We will aid the preparation of a limited number of highly demanded data bases.

Another area MITI wants to stress is local information dissemination. We call it a new media community. We have designated 15 areas as a new media community by 1985. The number of the designated communities is still insufficient, and we will add 7-8 more areas in the next fiscal year.

Those projects which show profitability will be carried out by loans from the Japan Development Bank. We would like to continue to test using model projects such as a wholesale distribution collective housing information network and a suburban information network.

As a similar local information dissemination, there is a "teletopia" plan of the Ministry of Postal Service. However, in a strict sense, that is a system to build a network and it is more of a hardware oriented project. In comparison, MITI's project is software oriented and its first concern is "what we use it for," One we determine the intended use, we will build hardware in consultation with NTT.

Other priority projects are, in descending order, a program for medium and small businesses, a program for energy, a program for local development and a program for consumers.

Each program encompasses many needed activities. What is common in all of these, however, boils down to "free and daring actions unleashed from taboos."

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END